

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	2	"6544438".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2006/07/13 17:18
L2	839	(alkaline near earth) same (light near (emitting or emissive))	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2006/07/13 17:20
L3	7	(alkaline near earth) near (light near (emitting or emissive))	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2006/07/13 17:22
L4	11	(alkaline near earth) near thiogallate near phosphor	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2006/07/13 17:27
L5	2	"6695982".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2006/07/13 17:29
L6	56	thiometallates	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2006/07/13 17:30
L7	5	L6 and (light near (emitting or emissive))	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2006/07/13 17:30
L8	56	thiometallate	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2006/07/13 17:47
L9	7	thiometallate and thiogallate	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2006/07/13 17:54
L10	3	"3623996".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2006/07/13 17:54
L11	5	"3639254".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2006/07/13 18:02

EAST Search History

L12	2	"5747929".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2006/07/13 18:03
L13	2	"5834053".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2006/07/13 18:07
L14	33	calcium near thiogallate	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2006/07/13 18:07
L15	27	L14 and (light near (emitting or emissive))	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2006/07/13 18:14
L16	2	"6773629".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2006/07/13 18:17
L17	1	"6773629".pn. and europium	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2006/07/13 18:17



STIC Search Report

EIC 1700

STIC Database Tracking Number: 195308

TO: Camie Thompson

Location: REM 10D28

Art Unit : 1774

July 13, 2006

Case Serial Number: 10/823288

From: Kathleen Fuller

Location: EIC 1700

REMSEN 4B28

Phone: 571/272-2505

Kathleen.Fuller@uspto.gov

Search Notes



STIC Search Results Feedback Form

EIC17000

Questions about the scope or the results of the search? Contact *the EIC searcher* or contact:

Kathleen Fuller, EIC 1700 Team Leader
571/272-2505 REMSEN 4B28

Voluntary Results Feedback Form

- I am an examiner in Workgroup. Example 1713
- Relevant prior art found, search results used as follows

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature
(journal articles, conference proceedings, new product announcements etc.)

➤ *Relevant prior art not found:*

- ☐ Results verified the lack of relevant prior art (helped determine patentability)
- ☐ Results were not useful in determining patentability or understanding the invention

Comments:

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Carmie Thompson Examiner #: 19244 Date: 7/11/06
 Art Unit: 574 Phone Number 301-571-272-1330 Serial Number: 10/823,288
 Mail Box and Bldg/Room Location: 10D28 Remden Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Methods & Devices using high efficiency alkaline earth metal
Biogallate - based phosphors
 Inventors (please provide full names): Yongeni Tian; Diane Zarembo;
Perrey Yorum

Earliest Priority Filing Date: 4/13/04

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with appropriate serial number.

SCIENTIFIC REFERENCE, BR
 Sci. Tech. Inf. Ctr.

JUL 12 11

Pat. & T.M. Office

Please do a search in claims 1-21

light source $SR_{1-x}Ca_xGa_2S_4$; yEu^{2+} & zGa_2S_3

where $x = 0.0001 - 1$

$z = 0.0001 - 2$

Thanks:
 Carmie

STAFF USE ONLY

Searcher: K. Fuller
 Searcher Phone #: _____
 Searcher Location: _____
 Date Searcher Picked Up: _____
 Date Completed: 7/13/06
 Searcher Prep & Review Time: 40
 Clerical Prep Time: 20
 Online Time: _____

Type of Search

NA Sequence (#) _____
 AA Sequence (#) _____
 Structure (#) 2
 Bibliographic _____
 Litigation _____
 Fulltext _____
 Patent Family _____
 Other _____

Vendors and cost where applicable

STN 1
 Dialog _____
 Questel/Orbit _____
 Dr.Link _____
 Lexis/Nexis _____
 Sequence Systems _____
 WWW/Internet _____
 Other (specify) _____

=> FILE REG

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STRUCTURE FILE UPDATES: 12 JUL 2006 HIGHEST RN 892389-74-1
DICTIONARY FILE UPDATES: 12 JUL 2006 HIGHEST RN 892389-74-1

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FILE LAST UPDATED: 12 Jul 2006 (20060712/ED)

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=> D QUE

L2 8 SEA FILE=REGISTRY ABB=ON (12024-22-5/BI OR 159832-15-2/BI OR
159832-16-3/BI OR 16910-54-6/BI OR 185537-42-2/BI OR 193695-91-
9/BI OR 193695-92-0/BI OR 768386-18-1/BI)
L3 28 SEA FILE=REGISTRY ABB=ON (SR(L)CA(L)GA(L)S)/ELS
L5 53 SEA FILE=HCAPLUS ABB=ON L3
L6 31 SEA FILE=HCAPLUS ABB=ON L5 AND LIGHT?
L7 31 SEA FILE=HCAPLUS ABB=ON L6 AND OPTIC?/SC,SX
L9 1 SEA FILE=REGISTRY ABB=ON L2 AND EU/ELS

L10 27380 SEA FILE=REGISTRY ABB=ON EU/ELS
 L11 2865 SEA FILE=HCAPLUS ABB=ON L9
 L12 13 SEA FILE=HCAPLUS ABB=ON L7 AND L11
 L13 74023 SEA FILE=HCAPLUS ABB=ON L10
 L14 36 SEA FILE=HCAPLUS ABB=ON L5 AND L13
 L15 28 SEA FILE=HCAPLUS ABB=ON L14 AND LIGHT?
 L16 28 SEA FILE=HCAPLUS ABB=ON L15 AND OPTIC?/SC,SX
 L17 28 SEA FILE=HCAPLUS ABB=ON L12 OR L16

*28 CA references with Sn Ca Ga S
and Eu*

=> D L17 BIB ABS IND HITSTR 1-28

L17 ANSWER 1 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 2006:560546 HCAPLUS
 DN 145:53079
 TI Phosphor converted light-emitting devices employing Eu-doped oxynitrides
 IN Mueller, Gerd O.; Mueller-Mach, Regina B.; Meyer, Joerg; Schmidt, Peter J.; Wiechert, Detlef U.
 PA Lumileds Lighting U.S., LLC, USA; Koninklijke Philips Electronics N.V.
 SO Eur. Pat. Appl., 13 pp.
 CODEN: EPXXDW
 DT Patent
 LA English
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1669429	A2	20060614	EP 2005-111855	20051208
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, BA, HR, IS, YU				
	US 2006124947	A1	20060615	US 2004-8863	20041210
	JP 2006169526	A2	20060629	JP 2005-357694	20051212
PRAI	US 2004-8863	A	20041210		

AB Structures are described which comprise a semiconductor light -emitting device configured to emit first light of a first peak wavelength; and a first wavelength converting material comprising (Ba_{1-x}Sr_x)₂-y-0.5zSi₅N₈-zO₂:Eu²⁺ where 0.2 < x < 0.3, the first wavelength converting material being configured to absorb at least a portion of the first light and emit second light of a second peak wavelength.

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
 Section cross-reference(s): 76

ST europium doped barium strontium silicon oxynitride phosphor electroluminescent device

IT Electroluminescent devices
 Phosphors
 (phosphor converted light-emitting device)

IT Oxynitrides
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (phosphor converted light-emitting device)

IT 889930-74-9
 RL: DEV (Device component use); USES (Uses)
 (cerium-, praseodymium-codoped; phosphor converted light -emitting device)

IT 12005-21-9, Yttrium aluminate (Y₃Al₅O₁₂) 12253-68-8, Aluminum lutetium oxide (Al₅Lu₃O₁₂)
 RL: DEV (Device component use); USES (Uses)
 (cerium-doped; phosphor converted light-emitting device)

IT 7440-10-0, Praseodymium, uses 7440-45-1, Cerium, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (dopant; phosphor converted light-emitting devices employing Eu-doped oxynitrides)

IT 12254-04-5, Aluminum barium magnesium oxide (Al₁₀BaMgO₁₇) 12592-70-0, Gallium strontium sulfide (Ga₂SrS₄) 20775-37-5, Barium magnesium silicate (Ba₃MgSi₂O₈) 27790-35-8 244242-39-5 311772-99-3, Barium strontium silicate (Ba₀-2Sr₀-2SiO₄) 677008-65-0 685881-69-0, Silicon strontium nitride oxide (SiSr_{0.5}NO) 889930-75-0
 RL: DEV (Device component use); USES (Uses)
 (europium-doped; phosphor converted light-emitting device)

IT 167028-73-1, Silicon strontium nitride (Si₅Sr₂N₈) 870639-33-1, Barium silicon strontium nitride ((Ba,Sr)₂Si₅N₈)
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (europium-doped; phosphor converted light-emitting devices employing Eu-doped oxynitrides)

IT 167028-74-2P, Barium silicon nitride (Ba₂Si₅N₈) 889930-70-5P, Barium calcium europium silicon nitride (Ba_{1.86}Ca_{0.1}Eu_{0.04}Si₅N₈) 889930-72-7P, Barium calcium silicon nitride (Ba_{1.9}Ca_{0.1}Si₅N₈)
 RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (europium-doped; phosphor converted light-emitting devices employing Eu-doped oxynitrides)

IT 7440-20-2D, Scandium, compds. 7440-42-8D, Boron, compds. 7440-55-3D, Gallium, compds.
 RL: DEV (Device component use); USES (Uses)
 (phosphor converted light-emitting device)

IT 7440-53-1, Europium, properties
 RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); USES (Uses)
 (phosphor converted light-emitting devices employing Eu-doped oxynitrides)

IT 889930-71-6P 889930-73-8P
 RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (phosphor converted light-emitting devices employing Eu-doped oxynitrides)

IT 677008-65-0 889930-75-0
 RL: DEV (Device component use); USES (Uses)
 (europium-doped; phosphor converted light-emitting device)

RN 677008-65-0 HCAPLUS

CN Barium calcium europium silicon strontium nitride oxide (Ba₀-0.25Ca₀-0.25Eu₀-0.2Si_{1.5}-2.5Sr_{0.55}-1N_{1.5}-2.5O_{1.5}-2.5) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1.5 - 2.5	17778-88-0
O	1.5 - 2.5	17778-80-2
Ca	0 - 0.25	7440-70-2
Eu	0 - 0.2	7440-53-1
Ba	0 - 0.25	7440-39-3
Sr	0.55 - 1	7440-24-6
Si	1.5 - 2.5	7440-21-3

RN 889930-75-0 HCAPLUS

CN Aluminum barium calcium gallium indium magnesium strontium sulfide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	x	7704-34-9
In	x	7440-74-6
Ca	x	7440-70-2
Ga	x	7440-55-3
Ba	x	7440-39-3
Sr	x	7440-24-6
Mg	x	7439-95-4
Al	x	7429-90-5

IT 889930-70-5P, Barium calcium europium silicon nitride
(Ba1.86Ca0.1Eu0.04Si5N8)

RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or
engineered material use); PREP (Preparation); USES (Uses)
(europium-doped; phosphor converted light-emitting devices
employing Eu-doped oxynitrides)

RN 889930-70-5 HCAPLUS

CN Barium calcium europium silicon nitride (Ba1.86Ca0.1Eu0.04Si5N8) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
N	8	17778-88-0
Ca	0.1	7440-70-2
Eu	0.04	7440-53-1
Ba	1.86	7440-39-3
Si	5	7440-21-3

IT 7440-53-1, Europium, properties

RL: DEV (Device component use); MOA (Modifier or additive use); PRP
(Properties); USES (Uses)
(phosphor converted light-emitting devices employing Eu-doped
oxynitrides)

RN 7440-53-1 HCAPLUS

CN Europium (8CI, 9CI) (CA INDEX NAME)

Eu

IT 889930-71-6P 889930-73-8P

RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or
engineered material use); PREP (Preparation); USES (Uses)
(phosphor converted light-emitting devices employing Eu-doped
oxynitrides)

RN 889930-71-6 HCAPLUS

CN Aluminum barium europium silicon strontium nitride oxide
(Al0.1Ba1.47Eu0.04Si4.9Sr0.49N7.9O0.1) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
N	7.9	17778-88-0
O	0.1	17778-80-2
Eu	0.04	7440-53-1
Ba	1.47	7440-39-3

Sr	0.49	7440-24-6
Si	4.9	7440-21-3
Al	0.1	7429-90-5

RN 889930-73-8 HCAPLUS

CN Barium boron europium silicon strontium nitride oxide
(Ba1.47B0.1Eu0.04Si4.9Sr0.49N7.90O0.1) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	7.9	17778-88-0
O	0.1	17778-80-2
Eu	0.04	7440-53-1
B	0.1	7440-42-8
Ba	1.47	7440-39-3
Sr	0.49	7440-24-6
Si	4.9	7440-21-3

L17 ANSWER 2 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2006:319705 HCAPLUS

DN 144:360005

TI White lamps with enhanced color contrast

IN Radkov, Emil Vergilov

PA USA

SO U.S. Pat. Appl. Publ., 20 pp., Cont.-in-part of U.S. Ser. No. 909,564.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 5

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2006071589	A1	20060406	US 2005-285122	20051122
	US 2006022582	A1	20060202	US 2004-909564	20040802
PRAI	US 2004-909564	A2	20040802		

AB A **lighting** apparatus for emitting white **light** is described comprising a semiconductor **light** source emitting radiation with a peak at .apprx.250-500 nm; a first phosphor having a peak emission at .apprx.450-550 nm; and a second phosphor having a peak emission at .apprx.615-670 nm; wherein the overall emission spectrum of the **lighting** apparatus has a depression at .apprx.550-615 nm, the depression extending to between .apprx.5-25% of the highest intensity of the emission spectrum of the **lighting** apparatus in the region at 400-700 nm. In this apparatus, the red-green color contrast is increased vs. the referent illuminant.

INCL 313487000; 313486000; 427066000; 257098000

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST lamp color contrast phosphor

IT Electric lamps

Phosphors

(white lamps with enhanced color contrast by using phosphors)

IT 1303-86-2D, Boron oxide (B2O3), mixture with calcium strontium phosphate
1314-11-0D, Strontium oxide (SrO), mixture with phosphorus oxide and boron
oxide 1314-56-3D, Phosphorus oxide (P2O5), mixture with strontium oxide
and boron oxide 10476-85-4D, Strontium chloride (SrCl2), mixture with
strontium silicate 12525-03-0, Calcium lanthanum sulfide (CaLa2S4)
12535-38-5, Strontium yttrium sulfide (SrY2S4) 20775-37-5, Barium
magnesium silicate (Ba3MgSi2O8) 51184-13-5, Aluminum nitride oxide

silicide 76125-60-5, Aluminum strontium oxide (Al₁₄Sr₄O₂₅)
 76461-00-2D, Strontium silicate (Sr₂Si₃O₈), mixture with strontium chloride
 82992-94-7, Calcium strontium sulfide ((Ca,Sr)S) 97358-83-3, Aluminum
 barium oxide (Al₈BaO₁₃) 99533-22-9, Calcium magnesium chloride silicate
 (Ca₈MgCl₂(SiO₄)₄) 173525-28-5 223757-06-0, Gadolinium sodium borate
 oxide (Gd₂Na₂(BO₃)₂O) 473908-57-5 675819-79-1 675819-82-6, Aluminum
 barium calcium strontium oxide (Al₂(Ba,Ca,Sr)O₄) 675819-83-7
 675819-86-0 675819-90-6 675819-91-7 675819-92-8
 841303-43-3 841303-44-4 841303-48-8 841303-50-2 864429-55-0
 864429-56-1 872458-24-7D, Calcium strontium phosphate ((Ca,Sr)₁₀(PO₄)₆),
 mixture with boron oxide 874142-79-7

RL: DEV (Device component use); USES (Uses)

(phosphor; white lamps with enhanced color contrast by using phosphors)

IT 7439-96-5, Manganese, uses 7439-98-7, Molybdenum, uses 7440-27-9,
 Terbium, uses 7440-36-0, Antimony, uses 7440-45-1, Cerium, uses
 7440-53-1, Europium, uses 7440-69-9, Bismuth, uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES
 (Uses)

(phosphor; white lamps with enhanced color contrast by using phosphors)

IT 1309-48-4D, Magnesium oxide (MgO), mixture with magnesium fluoride and
 germanium oxide 1310-53-8D, Germanium oxide (GeO₂), mixture with magnesium
 oxide and magnesium fluoride 7783-40-6D, Magnesium fluoride (MgF₂),
 mixture with magnesium oxide and germanium oxide 849586-02-3, Aluminum
 calcium silicon nitride (AlCaSiN₃) 874142-78-6

RL: DEV (Device component use); USES (Uses)

(white lamps with enhanced color contrast by using phosphors)

IT 675819-86-0

RL: DEV (Device component use); USES (Uses)

(phosphor; white lamps with enhanced color contrast by using phosphors)

RN 675819-86-0 HCAPLUS

CN Aluminum barium calcium gallium indium strontium sulfide
 ((Al,Ga,In)₂(Ba,Ca,Sr)S₄) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	4	7704-34-9
In	0 - 2	7440-74-6
Ca	0 - 1	7440-70-2
Ga	0 - 2	7440-55-3
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Al	0 - 2	7429-90-5

IT 7440-53-1, Europium, uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES
 (Uses)

(phosphor; white lamps with enhanced color contrast by using phosphors)

RN 7440-53-1 HCAPLUS

CN Europium (8CI, 9CI) (CA INDEX NAME)

Eu

L17 ANSWER 3 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2006:218083 HCAPLUS

DN 144:263269

TI Novel oxynitride phosphors

IN Chandran, Ramachandran Gopi; Hancu, Dan; Mallikarjuna, Nadagouda; Radkov, Emil Vergilov; Setlur, Anant Achyut; Sivaramakrishnan, Venkatraman; Srivastava, Alok Mani; Shankar, Madras Venugopal

PA India

SO U.S. Pat. Appl. Publ., 19 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2006049414	A1	20060309	US 2005-207489	20050819
PRAI	US 2004-602808P	P	20040819		
	US 2004-609859P	P	20040914		
	US 2005-643274P	P	20050112		

AB A light emitting device for emitting white light is described comprising a light source emitting with a peak radiation at .apprx.250-550 nm and a phosphor material radiationally coupled to the light source, the phosphor material comprising oxynitride and oxide phosphor compns. having various formulations. The phosphor materials having various formulations are also described.

INCL 257089000

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 76

ST oxynitride phosphor light emitting device LED

IT Electroluminescent devices
Phosphors

(oxynitride phosphors and LED using them)

IT 10476-85-4, Strontium chloride (SrCl₂) 76461-00-2, Strontium silicate (Sr₂Si₃O₈)

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(mixture; oxynitride phosphors and LED using them)

IT 877397-56-3 877397-57-4 877397-58-5, Boron
europium strontium nitride oxide (BEu_{0.05}Sr_{0.95}NO) 877397-59-6, Cerium
lutetium silicon nitride oxide (Ce_{0.12}Lu_{3.88}Si₂N₂O₇) 877397-60-9,
Aluminum barium oxide silicate (Al_{1.71}Ba_{0.70}Si_{1.13}(SiO₃)_{2.29})
877397-61-0, Aluminum barium europium oxide silicate
(Al_{1.71}Ba_{0.70}Eu_{0.10}Si_{1.13}(SiO₃)_{2.29}) 877397-62-1
877397-63-2

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(oxynitride phosphors and LED using them)

IT 7439-96-5, Manganese, uses 7439-98-7, Molybdenum, uses 7440-09-7,
Potassium, uses 7440-27-9, Terbium, uses 7440-36-0, Antimony, uses
7440-45-1, Cerium, uses 7440-53-1, Europium, uses 7440-69-9,
Bismuth, uses

RL: DEV (Device component use); MOA (Modifier or additive use); TEM
(Technical or engineered material use); USES (Uses)

(phosphor; oxynitride phosphors and LED using them)

IT 1303-86-2, Boron oxide (B₂O₃), uses 1314-11-0, Strontium oxide (SrO),
uses 1314-56-3, Phosphorus oxide (P₂O₅), uses 12525-03-0, Calcium
lanthanum sulfide (CaLa₂S₄) 12535-38-5, Strontium yttrium sulfide
(SrY₂S₄) 20775-37-5, Barium magnesium silicate (Ba₃MgSi₂O₈)
82992-94-7, Calcium strontium sulfide ((Ca,Sr)S) 97358-83-3, Aluminum
barium oxide (Al₈BaO₁₃) 99533-22-9, Calcium magnesium chloride silicate
(Ca₈MgCl₂(SiO₄)₄) 173525-28-5 223757-06-0, Gadolinium sodium borate
oxide (Gd₂Na₂(BO₃)₂O) 473908-57-5 675819-82-6, Aluminum barium calcium
strontium oxide (Al₂(Ba,Ca,Sr)O₄) 675819-83-7 675819-84-8, Barium

calcium strontium silicate ((Ba,Ca,Sr)2(SiO4)) 675819-86-0
 675819-90-6 675819-91-7 841303-43-3 841303-44-4 841303-46-6
 841303-47-7, Lutetium tungsten yttrium oxide ((Lu,Y)2WO6) 841303-48-8
 841303-50-2 841303-51-3 864429-55-0 864429-56-1 872458-24-7,
 Calcium strontium phosphate ((Ca,Sr)10(PO4)6) 877397-45-0 877397-46-1
 877397-47-2 877397-48-3 877397-49-4, Cerium lutetium silicon nitride
 oxide (Ce0.12Lu3.88Si4N4O8) 877397-50-7 877397-51-8, Cerium lutetium
 silicon nitride oxide (Ce0.18Lu5.82Si3N4O9) 877397-52-9 877397-54-1
 877397-55-2

RL: DEV (Device component use); TEM (Technical or engineered material
 use); USES (Uses)

(phosphor; oxynitride phosphors and LED using them)

IT 877397-56-3 877397-57-4 877397-58-5, Boron
 europium strontium nitride oxide (BEu0.05Sr0.95NO) 877397-61-0,
 Aluminum barium europium oxide silicate (Al1.71Ba0.7Eu0.101.13(SiO3)2.29)
 877397-62-1 877397-63-2

RL: DEV (Device component use); TEM (Technical or engineered material
 use); USES (Uses)

(oxynitride phosphors and LED using them)

RN 877397-56-3 HCAPLUS

CN Aluminum boron europium silicon strontium nitride oxide
 (Al3BEu0.21Si9Sr10.79N16O11) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====		
N	16	17778-88-0
O	11	17778-80-2
Eu	0.21	7440-53-1
B	1	7440-42-8
Sr	10.79	7440-24-6
Si	9	7440-21-3
Al	3	7429-90-5

RN 877397-57-4 HCAPLUS

CN Aluminum barium boron europium silicon strontium nitride oxide
 (Al3Ba4BEu0.21Si9Sr6.79N16O11) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====		
N	16	17778-88-0
O	11	17778-80-2
Eu	0.21	7440-53-1
B	1	7440-42-8
Ba	4	7440-39-3
Sr	6.79	7440-24-6
Si	9	7440-21-3
Al	3	7429-90-5

RN 877397-58-5 HCAPLUS

CN Boron europium strontium nitride oxide (BEu0.05Sr0.95NO) (9CI) (CA INDEX
 NAME)

Component	Ratio	Component Registry Number
=====		
N	1	17778-88-0
O	1	17778-80-2
Eu	0.05	7440-53-1

B	1	7440-42-8
Sr	0.95	7440-24-6

RN 877397-61-0 HCAPLUS

CN Aluminum barium europium oxide silicate (Al_{1.71}Ba_{0.7}Eu_{0.10}1.13(SiO₃)_{2.29}) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1.13	17778-80-2
O3Si	2.29	15593-90-5
Eu	0.1	7440-53-1
Ba	0.7	7440-39-3
Al	1.71	7429-90-5

RN 877397-62-1 HCAPLUS

CN Aluminum barium europium silicon nitride oxide (Al_{1.21}Ba_{0.7}Eu_{0.1}Si_{2.79}N_{0.50}7.5) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	0.5	17778-88-0
O	7.5	17778-80-2
Eu	0.1	7440-53-1
Ba	0.7	7440-39-3
Si	2.79	7440-21-3
Al	1.21	7429-90-5

RN 877397-63-2 HCAPLUS

CN Aluminum calcium europium manganese silicon nitride oxide (Al_{1.21}Ca_{0.7}Eu_{0.1}Mn_{0.1}Si_{2.79}N_{0.50}7.5) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	0.5	17778-88-0
O	7.5	17778-80-2
Ca	0.7	7440-70-2
Eu	0.1	7440-53-1
Si	2.79	7440-21-3
Mn	0.1	7439-96-5
Al	1.21	7429-90-5

IT 7440-53-1, Europium, uses

RL: DEV (Device component use); MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses) (phosphor; oxynitride phosphors and LED using them)

RN 7440-53-1 HCAPLUS

CN Europium (8CI, 9CI) (CA INDEX NAME)

Eu

IT 675819-86-0

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses) (phosphor; oxynitride phosphors and LED using them)

RN 675819-86-0 HCAPLUS

CN Aluminum barium calcium gallium indium strontium sulfide
((Al,Ga,In)2(Ba,Ca,Sr)S4) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	4	7704-34-9
In	0 - 2	7440-74-6
Ca	0 - 1	7440-70-2
Ga	0 - 2	7440-55-3
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Al	0 - 2	7429-90-5

L17 ANSWER 4 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2006:100758 HCAPLUS

DN 144:159974

TI White LEDs with tunable CRI

IN Radkov, Emil

PA Gelcore, LLC, USA

SO U.S. Pat. Appl. Publ., 20 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 5

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	-----	-----	-----	-----
PI	US 2006022582	A1	20060202	US 2004-909564	20040802
	WO 2006023100	A1	20060302	WO 2005-US23559	20050705
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	US 2006071589	A1	20060406	US 2005-285122	20051122
	US 2006097245	A1	20060511	US 2005-312268	20051220
PRAI	US 2002-407426P	P	20020830		
	WO 2003-US27363	A2	20030829		
	US 2004-831862	A2	20040426		
	US 2004-909564	A	20040802		

AB A lighting apparatus for emitting white light which can achieve a tunable color rendering index (CRI) and luminosity is described comprising a semiconductor light source emitting radiation having a peak emission at from about 250 to 500 nm; a first phosphor composition comprising at least one phosphor compound radiationally coupled to said light source; and a second phosphor composition comprising at least one phosphor compound radiationally coupled to said light source; wherein said first and second phosphor compns. have substantially the same emission color coordinates when excited by the same source radiation. A method for fabricating the lighting apparatus for emitting white light is also described.

INCL 313503000

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 76

ST white LED tunable color rendering index

IT Electroluminescent devices

Light sources

(white LEDs with tunable color rendering index by using two phosphor composition layers)

IT Light

(white; white LEDs with tunable color rendering index by using two phosphor composition layers)

IT 109166-42-9

RL: DEV (Device component use); USES (Uses)

(blue phosphor; white LEDs with tunable color rendering index by using two phosphor composition layers)

IT 12004-37-4, Aluminum strontium oxide (Al₂SrO₄)

RL: DEV (Device component use); USES (Uses)

(green phosphor; white LEDs with tunable color rendering index by using two phosphor composition layers)

IT 7440-53-1, Europium, uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(green phosphor; white LEDs with tunable color rendering index by using two phosphor composition layers)

IT 12015-72-4, Calcium chloride phosphate (Ca₅Cl(PO₄)₃)

RL: DEV (Device component use); USES (Uses)

(orange phosphor; white LEDs with tunable color rendering index by using two phosphor composition layers)

IT 1309-48-4, Magnesium oxide (MgO), uses 1310-53-8, Germanium oxide (GeO₂), uses 7783-40-6, Magnesium fluoride (MgF₂)

RL: DEV (Device component use); USES (Uses)

(red phosphor containing; white LEDs with tunable color rendering index by using two phosphor composition layers)

IT 1303-86-2, Boron oxide (B₂O₃), uses 1314-11-0, Strontium oxide (SrO), uses 1314-56-3, Phosphorus oxide (P₂O₅), uses 10476-85-4, Strontium chloride (SrCl₂) 12525-03-0, Calcium lanthanum sulfide (CaLa₂S₄)

12535-38-5, Strontium yttrium sulfide (SrY₂S₄) 20775-37-5, Barium magnesium silicate (Ba₃MgSi₂O₈) 76125-60-5, Aluminum strontium oxide (Al₁₄Sr₄O₂₅) 76461-00-2, Strontium silicate (Sr₂Si₃O₈) 82992-94-7, Calcium strontium sulfide ((Ca,Sr)₂S) 97358-83-3, Aluminum barium oxide (Al₈BaO₁₃) 99533-22-9, Calcium magnesium chloride silicate (Ca₈MgCl₂(SiO₄)₄) 173525-28-5 223757-06-0, Gadolinium sodium borate oxide (Gd₂Na₂(BO₃)₂O) 364629-01-6 473908-57-5 675819-82-6, Aluminum barium calcium strontium oxide (Al₂(Ba,Ca,Sr)O₄) 675819-83-7

675819-84-8, Barium calcium strontium silicate ((Ba,Ca,Sr)₂(SiO₄)) 675819-86-0 675819-90-6 675819-91-7 841303-43-3

841303-47-7, Lutetium tungsten yttrium oxide ((Lu,Y)₂WO₆) 841303-48-8

841303-50-2 841303-51-3 864429-55-0 864429-56-1 872458-24-7, Calcium strontium phosphate ((Ca,Sr)₁₀(PO₄)₆) 874142-78-6 874142-79-7

874142-80-0

RL: DEV (Device component use); USES (Uses)

(white LEDs with tunable color rendering index by using two phosphor composition layers)

IT 7439-96-5, Manganese, uses 7439-98-7, Molybdenum, uses 7440-09-7, Potassium, uses 7440-27-9, Terbium, uses 7440-36-0, Antimony, uses 7440-45-1, Cerium, uses 7440-69-9, Bismuth, uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(white LEDs with tunable color rendering index by using two phosphor composition layers)

composition layers)
 IT 7440-53-1, Europium, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES
 (Uses)
 (green phosphor; white LEDs with tunable color rendering index by using
 two phosphor composition layers)
 RN 7440-53-1 HCAPLUS
 CN Europium (8CI, 9CI) (CA INDEX NAME)

Eu

IT 675819-86-0
 RL: DEV (Device component use); USES (Uses)
 (white LEDs with tunable color rendering index by using two phosphor
 composition layers)
 RN 675819-86-0 HCAPLUS
 CN Aluminum barium calcium gallium indium strontium sulfide
 ((Al,Ga,In)2(Ba,Ca,Sr)S4) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	4	7704-34-9
In	0 - 2	7440-74-6
Ca	0 - 1	7440-70-2
Ga	0 - 2	7440-55-3
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Al	0 - 2	7429-90-5

L17 ANSWER 5 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 2006:29401 HCAPLUS
 DN 144:117389
 TI Efficient, green-emitting phosphors, and combinations with red-emitting
 phosphors
 IN Tian, Yongchi; Yocom, Perry Niel; Frederickson, Gerard; Yang, Liyou
 PA Sarnoff Corporation, USA
 SO PCT Int. Appl., 28 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
PI WO 2006005005	A2	20060112	WO 2005-US23537	20050705
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW			
RW:	AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			

US 2006012287 A1 20060119 US 2005-174856 20050705
 PRAI US 2004-585664P P 20040706
 US 2004-606981P P 20040903

AB A phosphor $\text{Sr}_{1-x}\text{Ca}_3\text{Ga}_2\text{S}_4\text{:Eu:xGa}_2\text{S}_3$ (where $x = 0-0.2$ (or .apprx.0.0001-0.2); $x_3 = 0.0001-1$), wherein a minor part of the europium component is substituted with praseodymium in an efficiency enhancing amount is described. The second phosphor $\text{Sr}_x\text{Ca}_{1-x}\text{S:Eu}_2^+, \text{Y}$ ($x_2 = 0-1$; Y = halides) may also be mixed with the $\text{Sr}_{1-x}\text{Ca}_3\text{Ga}_2\text{S}_4\text{:Eu:xGa}_2\text{S}_3$ phosphor. A light-emitting device using the phosphor is also described. A method of forming the $\text{Sr}_{1-x}\text{Ca}_3\text{Ga}_2\text{S}_4\text{:Eu:xGa}_2\text{S}_3$ phosphor with the median grain size at 2-12 μm is also described entailing precipitating $\text{SrSO}_4/\text{CaSO}_4$ and Eu(OH)_3 under conditions selected as appropriate for achieving the desired average grain size in a product of the method; precipitating Ga(OH)_3 with product of the first precipitating step; at least once conducting the following two sub-steps grinding the product of the second precipitating step or of a subsequent iteration of this step; and firing the ground product in hydrogen sulfide; at least once suspending the fired product in solvent in which it is not soluble and providing a period of time for a portion of the fired product to settle leaving a second portion suspended; and collecting the phosphor in one or more of the suspended or settled portions.

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
 Section cross-reference(s): 76

ST phosphor red green calcium gallium strontium sulfide europium; grain size control phosphor formation

IT Electroluminescent devices
 Grain size
 Quantum well devices
 (green-emitting phosphors, and combinations with red-emitting phosphors formed by grain size controlled manner)

IT Halogens
 RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
 (green-emitting phosphors, and combinations with red-emitting phosphors formed by grain size controlled manner)

IT Phosphors
 (green-emitting; green-emitting phosphors, and combinations with red-emitting phosphors formed by grain size controlled manner)

IT Phosphors
 (red-emitting; green-emitting phosphors, and combinations with red-emitting phosphors formed by grain size controlled manner)

IT 7440-53-1P, Europium, uses 16887-00-6P, Chloride, uses
 RL: CPS (Chemical process); IMF (Industrial manufacture); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
 (green-emitting phosphors, and combinations with red-emitting phosphors formed by grain size controlled manner)

IT 12024-22-5P, Gallium sulfide (Ga_2S_3) 153363-76-9P, Calcium strontium sulfide ($\text{Ca}_{0.25}\text{Sr}_{0.75}\text{S}$) 185537-42-2P, Calcium gallium strontium sulfide ($(\text{Ca}, \text{Sr})\text{Ga}_2\text{S}_4$)
 RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
 (green-emitting phosphors, and combinations with red-emitting phosphors formed by grain size controlled manner)

IT 7759-02-6 7778-18-9, Calcium sulfate (CaSO_4) 12023-99-3, Gallium hydroxide ($\text{Ga}(\text{OH})_3$) 16469-19-5, Europium hydroxide ($\text{Eu}(\text{OH})_3$)
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent) (green-emitting phosphors, and combinations with red-emitting phosphors formed by grain size controlled manner)

IT 7440-10-0P, Praseodymium, uses
RL: IMF (Industrial manufacture); MOA (Modifier or additive use); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (green-emitting phosphors, and combinations with red-emitting phosphors formed by grain size controlled manner)

IT 1308-96-9, Europium oxide (Eu_2O_3) 1633-05-2, Strontium carbonate (SrCO_3) 7440-55-3, Gallium, reactions 12037-29-5, Praseodymium oxide (Pr_6O_{11})
RL: RCT (Reactant); RACT (Reactant or reagent) (green-emitting phosphors, and combinations with red-emitting phosphors formed by grain size controlled manner)

IT 7440-53-1P, Europium, uses
RL: CPS (Chemical process); IMF (Industrial manufacture); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses) (green-emitting phosphors, and combinations with red-emitting phosphors formed by grain size controlled manner)

RN 7440-53-1 HCAPLUS
CN Europium (8CI, 9CI) (CA INDEX NAME)

Eu

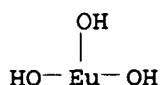
IT 185537-42-2P, Calcium gallium strontium sulfide ($(\text{Ca}, \text{Sr})\text{Ga}_2\text{S}_4$)
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses) (green-emitting phosphors, and combinations with red-emitting phosphors formed by grain size controlled manner)

RN 185537-42-2 HCAPLUS
CN Calcium gallium strontium sulfide ($(\text{Ca}, \text{Sr})\text{Ga}_2\text{S}_4$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	4	7704-34-9
Ca	0 - 1	7440-70-2
Ga	2	7440-55-3
Sr	0 - 1	7440-24-6

IT 16469-19-5, Europium hydroxide ($\text{Eu}(\text{OH})_3$)
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent) (green-emitting phosphors, and combinations with red-emitting phosphors formed by grain size controlled manner)

RN 16469-19-5 HCAPLUS
CN Europium hydroxide ($\text{Eu}(\text{OH})_3$) (7CI, 8CI, 9CI) (CA INDEX NAME)



IT 1308-96-9, Europium oxide (Eu2O3)
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (green-emitting phosphors, and combinations with red-emitting phosphors
 formed by grain size controlled manner)
 RN 1308-96-9 HCAPLUS
 CN Europium oxide (Eu2O3) (6CI, 8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L17 ANSWER 6 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 2006:9511 HCAPLUS
 DN 144:97410
 TI LED-based edge lit illumination system
 IN Jacob, Cherian; Chen, Chen-Lun Hsing; Radkov, Emil; Srivastava, Alok Mani;
 Setlur, Anant Achyut; Comanzo, Holly Ann; Shiang, Joseph
 PA Gelcore, LLC, USA
 SO U.S. Pat. Appl. Publ., 10 pp.
 CODEN: USXXCO
 DT Patent
 LA English
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2006001036	A1	20060105	US 2004-884205	20040702
PRAI	US 2004-884205		20040702		

AB An edge lit illumination system providing backlight utilizing a luminescent impregnated **lightguide** is described comprising an LED radiation source providing a first radiation and a **lightguide** optically coupled to the LED radiation source including a luminescent material embedded or coated on an output surface of the **lightguide** designed to absorb the first radiation, and emit one or more radiations, where the illumination system may further include addnl. optical components such as reflective layers, for directing radiation striking the back surfaces of the **light guide** back into the **lightguide**, as well as diffusion layers, UV reflectors, and polarizers. A **lightguide** for use with an LED **light** source in an edge lit **lighting** assembly is also described comprising an optically transmissive monolith having an input surface, a back surface, and an output surface; and a radiation conversion material capable of absorbing a first radiation at a first wavelength and emitting a second radiation at a second wavelength; wherein the radiation conversion material is at least one of dispersed in the **lightguide**, coated on the output surface of the **lightguide**, and dispersed in a film on the output and/or back surface of the **light guide**.

INCL 257098000

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST LED **light** illumination source **light** conversion phosphor waveguide

IT Electroluminescent devices

Light sources

Optical waveguides

(LED-based edge lit illumination system using phosphor doped **light guide**)

IT 12525-03-0, Calcium lanthanum sulfide (CaLa₂S₄) 12535-38-5, Strontium yttrium sulfide (SrY₂S₄) 20775-37-5, Barium magnesium silicate (Ba₃MgSi₂O₈) 76125-60-5, Aluminum strontium oxide (Al₁₄Sr₄O₂₅) 82992-94-7, Calcium strontium sulfide ((Ca,Sr)S) 97358-83-3, Aluminum barium oxide (Al₈BaO₁₃) 99533-22-9, Calcium magnesium chloride silicate (Ca₈MgCl₂(SiO₄)₄) 173525-28-5 223757-06-0, Gadolinium sodium borate oxide (Gd₂Na₂(BO₃)₂O) 473908-53-1 473908-57-5 675819-82-6, Aluminum barium calcium strontium oxide (Al₂(Ba,Ca,Sr)O₄) 675819-83-7 675819-84-8, Barium calcium strontium silicate ((Ba,Ca,Sr)₂(SiO₄)) 675819-85-9 675819-86-0 675819-88-2 675819-91-7 675819-92-8 683211-40-7, Barium calcium silicon strontium nitride ((Ba,Ca,Sr)₂Si₅N₈) 841303-43-3 841303-44-4 841303-47-7, Lutetium tungsten yttrium oxide ((Lu,Y)₂WO₆) 841303-50-2 841303-51-3 864429-55-0 872458-25-8 872458-26-9
 RL: DEV (Device component use); USES (Uses)
 (LED-based edge lit illumination system using phosphor doped light guide)

IT 7439-96-5, Manganese, uses 7439-98-7, Molybdenum, uses 7440-09-7, Potassium, uses 7440-27-9, Terbium, uses 7440-36-0, Antimony, uses 7440-45-1, Cerium, uses 7440-53-1, Europium, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (LED-based edge lit illumination system using phosphor doped light guide)

IT 872458-24-7, Calcium strontium phosphate ((Ca,Sr)₁₀(PO₄)₆)
 RL: DEV (Device component use); USES (Uses)
 (mixture with boron oxide; LED-based edge lit illumination system using phosphor doped light guide)

IT 1303-86-2, Boron oxide (B₂O₃), uses
 RL: DEV (Device component use); USES (Uses)
 (mixture with calcium strontium phosphate; LED-based edge lit illumination system using phosphor doped light guide)

IT 1309-48-4, Magnesium oxide (MgO), uses
 RL: DEV (Device component use); USES (Uses)
 (mixture with magnesium fluoride and germanium oxide; LED-based edge lit illumination system using phosphor doped light guide)

IT 7783-40-6, Magnesium fluoride (MgF₂)
 RL: DEV (Device component use); USES (Uses)
 (mixture with magnesium oxide and germanium oxide; LED-based edge lit illumination system using phosphor doped light guide)

IT 1310-53-8, Germanium oxide (GeO₂), uses
 RL: DEV (Device component use); USES (Uses)
 (mixture with magnesium oxide and magnesium fluoride; LED-based edge lit illumination system using phosphor doped light guide)

IT 1314-11-0, Strontium oxide (SrO), uses
 RL: DEV (Device component use); USES (Uses)
 (mixture with phosphorus oxide and boron oxide; LED-based edge lit illumination system using phosphor doped light guide)

IT 76461-00-2, Strontium silicate (Sr₂Si₃O₈)
 RL: DEV (Device component use); USES (Uses)
 (mixture with strontium chloride; LED-based edge lit illumination system using phosphor doped light guide)

IT 1314-56-3, Phosphorus oxide (P₂O₅), uses
 RL: DEV (Device component use); USES (Uses)
 (mixture with strontium oxide and boron oxide; LED-based edge lit illumination system using phosphor doped light guide)

IT 10476-85-4, Strontium chloride (SrCl₂)
 RL: DEV (Device component use); USES (Uses)
 (mixture with strontium silicate; LED-based edge lit illumination system using phosphor doped light guide)

IT 675819-86-0

RL: DEV (Device component use); USES (Uses)
 (LED-based edge lit illumination system using phosphor doped
 light guide)

RN 675819-86-0 HCAPLUS

CN Aluminum barium calcium gallium indium strontium sulfide
 ((Al,Ga,In)2(Ba,Ca,Sr)S4) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	4	7704-34-9
In	0 - 2	7440-74-6
Ca	0 - 1	7440-70-2
Ga	0 - 2	7440-55-3
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Al	0 - 2	7429-90-5

IT 7440-53-1, Europium, uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES
 (Uses)
 (LED-based edge lit illumination system using phosphor doped
 light guide)

RN 7440-53-1 HCAPLUS

CN Europium (8CI, 9CI) (CA INDEX NAME)

Eu

L17 ANSWER 7 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2005:1132470 HCAPLUS

DN 143:396050

TI Ce3+ and Eu2+ doped phosphors for light generation and
 electroluminescent devices employing the phosphors

IN Setlur, Anant Achyut; Radkov, Emil

PA Gelcore Llc, USA

SO U.S. Pat. Appl. Publ., 11 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	US 2005230689	A1	20051020	US 2004-827738	20040420
PRAI	US 2004-827738		20040420		

AB Disclosed are phosphor compns. comprising a host lattice containing Ce3+ and Eu2+ ions, where the Ce3+ is capable of absorbing a first radiation having a peak emission from about 350 to about 550 nm and further where energy from the absorbed radiation is capable of being transferred from Ce3+ to Eu2+ ions, resulting in emission of a second radiation from the Eu2+ ions. Also disclosed are light emitting devices including a semiconductor light source and the above phosphor; phosphor blends of the above phosphors and one or more addnl. phosphors and white light emitting devices incorporating the phosphors. The preferred blends are used to make light sources with CRI values greater than 90 at any CCT from about 2500 to 8000 K.

IC ICM H01L027-15

INCL 257079000; 313503000; 257431000

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 76

ST cerium europium doped phosphor electroluminescent device

IT Electroluminescent devices

Phosphors

(Ce³⁺ and Eu²⁺ doped phosphors for light generation and electroluminescent devices employing phosphors)

IT Garnet-type crystals

(host lattice; Ce³⁺ and Eu²⁺ doped phosphors for light generation and electroluminescent devices employing phosphors)

IT Nitrides

Oxides (inorganic), uses

Oxynitrides

Silicates, uses

Sulfides, uses

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(host lattice; Ce³⁺ and Eu²⁺ doped phosphors for light generation and electroluminescent devices employing phosphors)

IT Alkaline earth pnictides

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(nitrides, nitridosilicates; Ce³⁺ and Eu²⁺ doped phosphors for light generation and electroluminescent devices employing phosphors)

IT Oxides (inorganic), uses

Sulfides, uses

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(oxide sulfides, host lattice; Ce³⁺ and Eu²⁺ doped phosphors for light generation and electroluminescent devices employing phosphors)

IT Encapsulants

(phosphor dispersed in; Ce³⁺ and Eu²⁺ doped phosphors for light generation and electroluminescent devices employing phosphors)

IT 7440-45-1, Cerium, properties 7440-53-1, Europium, properties 16910-54-6, Europium(2+), properties 18923-26-7, Cerium(3+), properties

RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(Ce³⁺ and Eu²⁺ doped phosphors for light generation and electroluminescent devices employing phosphors)

IT 127575-65-9, Aluminum gallium indium nitride

RL: DEV (Device component use); USES (Uses)

(LED; Ce³⁺ and Eu²⁺ doped phosphors for light generation and electroluminescent devices employing phosphors)

IT 675819-83-7

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(cerium, terbium-codoped; Ce³⁺ and Eu²⁺ doped phosphors for light generation and electroluminescent devices employing phosphors including)

IT 12525-03-0, Calcium lanthanum sulfide (CaLa₂S₄)

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(cerium-doped; Ce³⁺ and Eu²⁺ doped phosphors for light generation and electroluminescent devices employing phosphors including)

- IT 223757-06-0, Gadolinium sodium borate oxide ($\text{Gd}_2\text{Na}_2(\text{BO}_3)_2\text{O}$)
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(cerium-terbium-codoped; Ce^{3+} and Eu^{2+} doped phosphors for light generation and electroluminescent devices employing phosphors including)
- IT 7439-96-5, Manganese, uses 7439-98-7, Molybdenum, uses 7440-09-7, Potassium, uses 7440-27-9, Terbium, uses 7440-36-0, Antimony, uses 7440-69-9, Bismuth, uses
RL: DEV (Device component use); MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
(dopant; Ce^{3+} and Eu^{2+} doped phosphors for light generation and electroluminescent devices employing phosphors including)
- IT 173525-28-5 675819-90-6 675819-91-7
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(europium, bismuth-codoped; Ce^{3+} and Eu^{2+} doped phosphors for light generation and electroluminescent devices employing phosphors including)
- IT 20548-54-3, Calcium sulfide
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(europium, cerium-codoped phosphor; Ce^{3+} and Eu^{2+} doped phosphors for light generation and electroluminescent devices employing phosphors)
- IT 99533-22-9, Calcium magnesium chloride silicate ($\text{Ca}_8\text{MgCl}_2(\text{SiO}_4)_4$)
473908-57-5 841303-50-2 864429-56-1
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(europium, manganese-codoped; Ce^{3+} and Eu^{2+} doped phosphors for light generation and electroluminescent devices employing phosphors including)
- IT 841303-47-7, Lutetium tungsten yttrium oxide ($(\text{Lu},\text{Y})_2\text{WO}_6$)
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(europium, molybdenum-codoped; Ce^{3+} and Eu^{2+} doped phosphors for light generation and electroluminescent devices employing phosphors including)
- IT 20775-37-5, Barium magnesium silicate ($\text{Ba}_3\text{MgSi}_2\text{O}_8$) 76125-60-5, Aluminum strontium oxide ($\text{Al}_{14}\text{Sr}_4\text{O}_{25}$) 97358-83-3, Aluminum barium oxide ($\text{Al}_8\text{BaO}_{13}$) 675819-82-6, Aluminum barium calcium strontium oxide ($\text{Al}_2(\text{Ba},\text{Ca},\text{Sr})\text{O}_4$) 675819-84-8, Barium calcium strontium silicate ($(\text{Ba},\text{Ca},\text{Sr})_2(\text{SiO}_4)$) 675819-86-0 841303-46-6 841303-48-8
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(europium-doped; Ce^{3+} and Eu^{2+} doped phosphors for light generation and electroluminescent devices employing phosphors including)
- IT 12535-38-5, Strontium yttrium sulfide (SrY_2S_4) 51184-13-5, Sialon 82992-94-7, Calcium strontium sulfide ($(\text{Ca},\text{Sr})\text{S}$) 866923-83-3 866923-84-4 866923-85-5
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(host lattice; Ce^{3+} and Eu^{2+} doped phosphors for light generation and electroluminescent devices employing phosphors)
- IT 841303-51-3
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(potassium-cerium-terbium-codoped; Ce^{3+} and Eu^{2+} doped phosphors for light generation and electroluminescent devices employing phosphors)

phosphors including)
 IT 7440-53-1, Europium, properties 16910-54-6,
 Europium(2+), properties
 RL: DEV (Device component use); MOA (Modifier or additive use); PRP
 (Properties); TEM (Technical or engineered material use); USES (Uses)
 (Ce3+ and Eu2+ doped phosphors for light generation and
 electroluminescent devices employing phosphors)
 RN 7440-53-1 HCAPLUS
 CN Europium (8CI, 9CI) (CA INDEX NAME)

Eu

RN 16910-54-6 HCAPLUS
 CN Europium, ion (Eu2+) (8CI, 9CI) (CA INDEX NAME)

Eu2+

IT 675819-86-0
 RL: DEV (Device component use); TEM (Technical or engineered material
 use); USES (Uses)
 (europium-doped; Ce3+ and Eu2+ doped phosphors for light
 generation and electroluminescent devices employing phosphors
 including)
 RN 675819-86-0 HCAPLUS
 CN Aluminum barium calcium gallium indium strontium sulfide
 ((Al,Ga,In)2(Ba,Ca,Sr)S4) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	4	7704-34-9
In	0 - 2	7440-74-6
Ca	0 - 1	7440-70-2
Ga	0 - 2	7440-55-3
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Al	0 - 2	7429-90-5

IT 866923-84-4
 RL: DEV (Device component use); TEM (Technical or engineered material
 use); USES (Uses)
 (host lattice; Ce3+ and Eu2+ doped phosphors for light
 generation and electroluminescent devices employing phosphors)
 RN 866923-84-4 HCAPLUS
 CN Aluminum calcium gallium indium strontium sulfide
 ((Al,Ga,In)2(Ca,Ga,Sr)(Ca,Sr)S5) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	5	7704-34-9
In	0 - 2	7440-74-6
Ca	0 - 2	7440-70-2
Ga	0 - 3	7440-55-3
Sr	0 - 2	7440-24-6
Al	0 - 2	7429-90-5

L17 ANSWER 8 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2005:1106744 HCAPLUS

DN 143:396086

TI LED illumination device with layered phosphor pattern minimizing non-radiative loss

IN Setlur, Anant Achyut; Shiang, Joseph John; Srivastava, Alok Mani; Comanzo, Holly Ann; Weaver, Stanton Earl; Becker, Charles Adrian

PA USA

SO U.S. Pat. Appl. Publ., 11 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2005227388	A1	20051013	US 2004-813338	20040330
	WO 2005101447	A2	20051027	WO 2005-US8894	20050316
	W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW			
	RW:	BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			

PRAI US 2004-813338 A 20040330

AB Methods of forming a light emitting device are discussed which entail depositing a first phosphor material over a semiconductor light emitter and depositing a second phosphor material over the first phosphor material, where the first phosphor material has at least one of a shorter decay time and a lower absorption of radiation from the semiconductor light emitter than the second phosphor material. Such an arrangement provides a light emitting device with improved lumen output and color stability over a range of drive currents.

IC ICM H01J001-62

ICS H01L021-00; H01J063-04

INCL 438022000

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 76

ST LED electroluminescent device layered phosphor pattern

IT Electroluminescent devices

Phosphors

(LED illumination device with layered phosphor pattern minimizing non-radiative loss)

IT Epoxy resins, uses

Polysiloxanes, uses

RL: DEV (Device component use); USES (Uses)

(matrix; LED illumination device with layered phosphor pattern minimizing non-radiative loss)

IT 864429-55-0

RL: DEV (Device component use); USES (Uses)

(cerium-doped; LED illumination device with layered phosphor pattern minimizing non-radiative loss)

IT 12005-21-9, Yttrium aluminate (Y3Al5O12) 55763-23-0, Aluminum gallium

yttrium oxide (Al₃Ga₂Y₃O₁₂) 110739-43-0, Aluminum gallium yttrium oxide (Al₄GaY₃O₁₂)
RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(cerium-doped; LED illumination device with layered phosphor pattern minimizing non-radiative loss)

IT 7439-96-5, Manganese, uses 7440-53-1, Europium, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(dopant; LED illumination device with layered phosphor pattern minimizing non-radiative loss)

IT 7440-45-1, Cerium, properties
RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(dopant; LED illumination device with layered phosphor pattern minimizing non-radiative loss)

IT 473908-57-5
RL: DEV (Device component use); USES (Uses)
(doped; LED illumination device with layered phosphor pattern minimizing non-radiative loss)

IT 841303-46-6
RL: DEV (Device component use); USES (Uses)
(europium, manganese-codoped; LED illumination device with layered phosphor pattern minimizing non-radiative loss)

IT 864429-56-1
RL: DEV (Device component use); USES (Uses)
(europium, manganese-codoped; LED illumination device with layered phosphor pattern minimizing non-radiative loss)

IT 20775-37-5, Barium magnesium silicate (Ba₃MgSi₂O₈) 76125-60-5, Aluminum strontium oxide (Al₁₄Sr₄O₂₅) 97358-83-3, Aluminum barium oxide (Al₈BaO₁₃) 124366-12-7, Strontium chloride silicate 144920-98-9, Strontium borate metaphosphate oxide (Sr₂(BO₃)_{0.32}(PO₃)_{1.68}O_{0.68}) 675819-82-6, Aluminum barium calcium strontium oxide (Al₂(Ba,Ca,Sr)₄O₄) 675819-84-8, Barium calcium strontium silicate ((Ba,Ca,Sr)₂(SiO₄)) 675819-86-0 841303-48-8 841303-50-2
RL: DEV (Device component use); USES (Uses)
(europium-doped; LED illumination device with layered phosphor pattern minimizing non-radiative loss)

IT 12159-91-0, Germanium magnesium fluoride oxide (Ge₂Mg₈F₂₀11)
RL: DEV (Device component use); USES (Uses)
(manganese-doped; LED illumination device with layered phosphor pattern minimizing non-radiative loss)

IT 7440-53-1, Europium, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(dopant; LED illumination device with layered phosphor pattern minimizing non-radiative loss)

RN 7440-53-1 HCAPLUS
CN Europium (8CI, 9CI) (CA INDEX NAME)

Eu

IT 675819-86-0
RL: DEV (Device component use); USES (Uses)
(europium-doped; LED illumination device with layered phosphor pattern minimizing non-radiative loss)

RN 675819-86-0 HCAPLUS
CN Aluminum barium calcium gallium indium strontium sulfide

((Al,Ga,In)2(Ba,Ca,Sr)S4) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	4	7704-34-9
In	0 - 2	7440-74-6
Ca	0 - 1	7440-70-2
Ga	0 - 2	7440-55-3
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Al	0 - 2	7429-90-5

L17 ANSWER 9 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2005:1103082 HCAPLUS

DN 143:376192

TI Using multiple types of phosphor in combination with a light emitting device

IN Oon, Su Lin; Chua, Janet Bee Yin

PA Malay.

SO U.S. Pat. Appl. Publ., 13 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2005224828	A1	20051013	US 2004-817359	20040402
PRAI	US 2004-817359		20040402		

AB **Light** sources are described which comprise a **light** -emitting device and, over the **light**-emitting device, an epoxy layer containing a first type of phosphor which emits a first color of **light** when excited and a second type of phosphor which emits a second (different) color of **light** when excited. Methods for emitting colored **light** are described in which the **light** from the **light**-emitting device is combined with the **light** from the different phosphor types.

IC ICM H01L029-22

INCL 257099000

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 76

ST **light** source LED multiple color conversion phosphor

IT Phosphors

(color-converting; **light** sources using multiple types of color-converting phosphors in combination with a **light** emitting device and colored **light** generation using the sources)

IT Electroluminescent devices

(**light** sources using multiple types of color-converting phosphors in combination with a **light** emitting device and colored **light** generation using the sources)

IT 12005-19-5, Terbium aluminate (Tb3Al5O12) 12005-21-9, YAG

RL: DEV (Device component use); USES (Uses)

(cerium-activated; **light** sources using multiple types of color-converting phosphors in combination with a **light** emitting device and colored **light** generation using the sources)

IT 1315-09-9, Zinc selenide 109657-92-3, Zinc selenide sulfide

(ZnSe_{0.5}SO_{0.5})
RL: DEV (Device component use); USES (Uses)
(chlorine- and copper-activated; light sources using multiple types of color-converting phosphors in combination with a light emitting device and colored light generation using the sources)

IT 1314-98-3, Zinc sulfide, uses
RL: DEV (Device component use); USES (Uses)
(copper-activated; light sources using multiple types of color-converting phosphors in combination with a light emitting device and colored light generation using the sources)

IT 20548-54-3, Calcium sulfide
RL: DEV (Device component use); USES (Uses)
(europium- and manganese-activated; light sources using multiple types of color-converting phosphors in combination with a light emitting device and colored light generation using the sources)

IT 1314-96-1, Strontium sulfide 12592-70-0, Gallium strontium sulfide (Ga₂SrS₄) 188547-08-2, Barium silicon nitride (BaSi₇N₁₀) 272792-87-7 866147-01-5, Barium gallium strontium sulfide (BaGa₄SrS₇) 866147-02-6, Barium calcium strontium silicate ((Ba,Ca)Sr(SiO₄)) 866147-03-7
RL: DEV (Device component use); USES (Uses)
(europium-activated; light sources using multiple types of color-converting phosphors in combination with a light emitting device and colored light generation using the sources)

IT 12159-91-0, Germanium magnesium fluoride oxide (Ge₂Mg₈F₂₀11)
RL: DEV (Device component use); USES (Uses)
(manganese-activated; light sources using multiple types of color-converting phosphors in combination with a light emitting device and colored light generation using the sources)

IT 7439-96-5, Manganese, uses 7440-22-4, Silver, uses 7440-45-1, Cerium, uses 7440-50-8, Copper, uses 7440-53-1, Europium, uses 14701-21-4, Silver 1+, uses 16397-91-4, Manganese 2+, uses 16910-54-6, Europium 2+, uses 17493-86-6, Copper 1+, uses 19768-33-3, Manganese 4+, uses 22537-15-1, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(phosphors activated with; light sources using multiple types of color-converting phosphors in combination with a light emitting device and colored light generation using the sources)

IT 12442-27-2, Cadmium zinc sulfide ((Cd,Zn)S)
RL: DEV (Device component use); USES (Uses)
(silver-activated; light sources using multiple types of color-converting phosphors in combination with a light emitting device and colored light generation using the sources)

IT 272792-87-7 866147-03-7
RL: DEV (Device component use); USES (Uses)
(europium-activated; light sources using multiple types of color-converting phosphors in combination with a light emitting device and colored light generation using the sources)

RN 272792-87-7 HCAPLUS
CN Aluminum barium calcium gallium strontium sulfide ((Al,Ga)₂(Ba,Ca,Sr)S₄) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	4	7704-34-9
Ca	0 - 1	7440-70-2
Ga	0 - 2	7440-55-3
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Al	0 - 2	7429-90-5

RN 866147-03-7 HCAPLUS

CN Barium calcium europium silicon strontium nitride ((Ba,Ca,Sr)EuSi5N8)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
N	8	17778-88-0
Ca	0 - 1	7440-70-2
Eu	1	7440-53-1
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Si	5	7440-21-3

IT 7440-53-1, Europium, uses 16910-54-6, Europium 2+, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)(phosphors activated with; light sources using multiple types
of color-converting phosphors in combination with a light
emitting device and colored light generation using the
sources)

RN 7440-53-1 HCAPLUS

CN Europium (8CI, 9CI) (CA INDEX NAME)

Eu

RN 16910-54-6 HCAPLUS

CN Europium, ion (Eu2+) (8CI, 9CI) (CA INDEX NAME)

Eu2+

L17 ANSWER 10 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2005:1005726 HCAPLUS

DN 143:295248

TI Silicate phosphor and blends thereof for use in white light
sourcesIN Setlur, Anant Achyut; Srivastava, Alok Mani; Comanzo, Holly Ann; Hancu,
Dan; Valyou, Briel Linda Jane

PA Gelcore LLC, USA

SO U.S. Pat. Appl. Publ., 12 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2005199897	A1	20050915	US 2004-797784	20040310
	WO 2005091862	A2	20051006	WO 2005-US5546	20050222
	WO 2005091862	A3	20060427		
	W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW			
	RW:	BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
PRAI	US 2004-797784	A	20040310		
AB	<p>Lighting apparatus for emitting white light is described which comprises a semiconductor light source (e.g., a light-emitting diode, especially an AlGaInN light-emitting diode) emitting radiation at 250-500 nm; and a phosphor composition radiationally coupled to the light source, the phosphor composition comprising (Ba,Sr,Ca)SiO₄:Eu (sic). Preferred blends include (Sr,Ba,Ca)SiO₄:Eu and ≥ 1 of (Sr,Mg,Ca,Ba,Zn)₂P₂O₇:Eu,Mn; (Ca,Sr,Ba,Mg)₅(PO₄)₃(Cl,F,OH):Eu,Mn; (Sr,Ba,Ca)MgAl₁₀O₁₇:Eu,Mn; and Mg₄FGeO₆:Mn⁴⁺; and ≥ 1 garnet phosphors having the general formula (Y,Gd,La,Lu,T,Pr,Sm)₃(Al,Ga,In)₅O₁₂:Ce.</p>				
IC	<p>ICM H01L033-00 ICS H01L021-00</p>				
INCL	257098000; 257100000; 438025000				
CC	73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)				
ST	white light source alk earth silicate phosphor blend;				
	electroluminescent device alk earth silicate conversion phosphor blend				
IT	Electroluminescent devices				
	(alkaline earth silicate phosphors and blends containing them for color conversion in)				
IT	Silicates, uses				
	RL: DEV (Device component use); USES (Uses)				
	(alkaline earth; white light sources using alkaline earth silicate phosphors and blends containing them)				
IT	Alkaline earth compounds				
	RL: DEV (Device component use); USES (Uses)				
	(silicates; white light sources using alkaline earth silicate phosphors and blends containing them)				
IT	Phosphors				
	(white light sources using alkaline earth silicate phosphors and blends containing them)				
IT	127575-65-9, Aluminum gallium indium nitride				
	RL: DEV (Device component use); USES (Uses)				
	(alkaline earth silicate phosphors and blends containing them for color conversion in electroluminescent devices based on)				
IT	473908-53-1 841303-43-3				
	RL: DEV (Device component use); USES (Uses)				
	(antimony- and europium- and manganese-activated; white light sources using alkaline earth silicate phosphors in blends containing)				
IT	173525-28-5 675819-90-6 675819-91-7				
	RL: DEV (Device component use); USES (Uses)				
	(bismuth- and europium-activated; white light sources using alkaline earth silicate phosphors in blends containing)				

IT 841303-51-3
RL: DEV (Device component use); USES (Uses)
(cerium- and potassium- and terbium-activated; white light sources using alkaline earth silicate phosphors in blends containing)

IT 223757-06-0, Gadolinium sodium borate oxide ($\text{Gd}_2\text{Na}_2(\text{BO}_3)_2\text{O}$) 675819-83-7
RL: DEV (Device component use); USES (Uses)
(cerium- and terbium-activated; white light sources using alkaline earth silicate phosphors in blends containing)

IT 12525-03-0, Calcium lanthanum sulfide (CaLa_2S_4) 864429-55-0
RL: DEV (Device component use); USES (Uses)
(cerium-activated; white light sources using alkaline earth silicate phosphors in blends containing)

IT 99533-22-9, Calcium magnesium chloride silicate ($\text{Ca}_8\text{MgCl}_2(\text{SiO}_4)_4$)
473908-57-5 675819-79-1 841303-46-6 841303-50-2 864429-56-1
RL: DEV (Device component use); USES (Uses)
(europium- and manganese-activated; white light sources using alkaline earth silicate phosphors in blends containing)

IT 841303-47-7, Lutetium tungsten yttrium oxide ($(\text{Lu},\text{Y})_2\text{WO}_6$)
RL: DEV (Device component use); USES (Uses)
(europium- and molybdenum-activated; white light sources using alkaline earth silicate phosphors in blends containing)

IT 675819-84-8, Barium calcium strontium silicate ($(\text{Ba},\text{Ca},\text{Sr})_2(\text{SiO}_4)$)
RL: DEV (Device component use); USES (Uses)
(europium-activated; white light sources using alkaline earth silicate phosphors and blends containing them)

IT 11084-89-2, Strontium chloride silicate ($\text{Sr}_4\text{Cl}_4\text{Si}_3\text{O}_8$) 12535-38-5,
Strontium yttrium sulfide (SrY_2S_4) 20775-37-5 76125-60-5, Aluminum strontium oxide ($\text{Al}_{14}\text{Sr}_4\text{O}_{25}$) 82992-94-7, Calcium strontium sulfide ($(\text{Ca},\text{Sr})\text{S}$) 97358-83-3, Aluminum barium oxide ($\text{Al}_8\text{BaO}_{13}$) 144920-98-9,
Strontium borate metaphosphate oxide ($\text{Sr}_2(\text{BO}_3)0.32(\text{PO}_3)1.68\text{O}_0.68$)
675819-82-6, Aluminum barium calcium strontium oxide ($\text{Al}_2(\text{Ba},\text{Ca},\text{Sr})\text{O}_4$)
675819-85-9 675819-86-0
RL: DEV (Device component use); USES (Uses)
(europium-activated; white light sources using alkaline earth silicate phosphors in blends containing)

IT 12159-91-0, Germanium magnesium fluoride oxide ($\text{GeMg}_4\text{FO}_{5.5}$) 193361-69-2,
Germanium magnesium fluoride oxide (GeMg_4FO_6)
RL: DEV (Device component use); USES (Uses)
(manganese-activated; white light sources using alkaline earth silicate phosphors in blends containing)

IT 7439-96-5, Manganese, uses 7439-98-7, Molybdenum, uses 7440-09-7,
Potassium, uses 7440-27-9, Terbium, uses 7440-36-0, Antimony, uses 7440-45-1, Cerium, uses 7440-53-1, Europium, uses 7440-69-9,
Bismuth, uses 16065-87-5, Molybdenum 6+, uses 16397-91-4, Manganese 2+, uses 16910-54-6, Europium 2+, uses 18923-26-7, Cerium 3+, uses 19768-33-3, Manganese 4+, uses 22541-18-0, Europium 3+, uses 22541-20-4, Terbium 3+, uses 23713-46-4, Bismuth 3+, uses 23713-48-6, Antimony 3+, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(phosphors activated with; white light sources using alkaline earth silicate phosphors and blends containing them)

IT 864429-52-7, Barium europium strontium silicate ($\text{Ba}_{0.05}\text{Eu}_{0.05}\text{Sr}_{1.9}(\text{SiO}_4)$) 864429-53-8, Calcium europium strontium silicate ($\text{Ca}_{0.72}\text{Eu}_{0.12}\text{Sr}_{1.16}(\text{SiO}_4)$)
RL: DEV (Device component use); USES (Uses)
(white light sources using alkaline earth silicate phosphors and blends containing them)

IT 675819-86-0
RL: DEV (Device component use); USES (Uses)

(europium-activated; white light sources using alkaline earth silicate phosphors in blends containing)

RN 675819-86-0 HCAPLUS

CN Aluminum barium calcium gallium indium strontium sulfide
((Al,Ga,In)2(Ba,Ca,Sr)S4) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	4	7704-34-9
In	0 - 2	7440-74-6
Ca	0 - 1	7440-70-2
Ga	0 - 2	7440-55-3
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Al	0 - 2	7429-90-5

IT 7440-53-1, Europium, uses 16910-54-6, Europium 2+, uses
22541-18-0, Europium 3+, uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)

(phosphors activated with; white light sources using alkaline earth silicate phosphors and blends containing them)

RN 7440-53-1 HCAPLUS

CN Europium (8CI, 9CI) (CA INDEX NAME)

Eu

RN 16910-54-6 HCAPLUS

CN Europium, ion (Eu2+) (8CI, 9CI) (CA INDEX NAME)

Eu2+

RN 22541-18-0 HCAPLUS

CN Europium, ion (Eu3+) (8CI, 9CI) (CA INDEX NAME)

Eu3+

IT 864429-52-7, Barium europium strontium silicate
(Ba0.05Eu0.05Sr1.9(SiO4)) 864429-53-8, Calcium europium
strontium silicate (Ca0.72Eu0.12Sr1.16(SiO4))

RL: DEV (Device component use); USES (Uses)

(white light sources using alkaline earth silicate phosphors and blends containing them)

RN 864429-52-7 HCAPLUS

CN Barium europium strontium silicate (Ba0.05Eu0.05Sr1.9(SiO4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O4Si	1	17181-37-2
Eu	0.05	7440-53-1
Ba	0.05	7440-39-3

Sr | 1.9 | 7440-24-6

RN 864429-53-8 HCAPLUS

CN Calcium europium strontium silicate (Ca_{0.72}Eu_{0.12}Sr_{1.16}(SiO₄)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O4Si	1	17181-37-2
Ca	0.72	7440-70-2
Eu	0.12	7440-53-1
Sr	1.16	7440-24-6

L17 ANSWER 11 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2005:637995 HCAPLUS

DN 143:142365

TI High-luminance phosphors and LED of low consumption and good color reproduction therewith

IN Suzuki, Hideo; Hase, Takashi

PA Kasei Optonix, Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 16 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	JP 2005194340	A2	20050721	JP 2003-436997	20031226
PRAI	JP 2003-436997		20031226		

AB Claimed are red-emitting phosphors containing Li and represented by (La_{1-x-y}Eu_xLn_y)₂O₂S (x = 0.02-0.50, y = 0-0.50; Ln = Y, Gd, Lu, Sc, Sm, and/or Er), for pumping sources of UV or blue-light sources. The phosphors may contain 5-10000 ppm (or 50-5000 ppm) Li. Further claimed are white-emitting or multicolor-emitting phosphors consisting of the red-emitting phosphors, green-emitting phosphors, and blue- or yellow-emitting phosphors for pumping sources of near-UV or blue-light sources. The green-emitting phosphors may be chosen from ZnS:Cu,Al, ZnS:Au,Al, ZnS:Au,Cu,Al, BaMgAl₁₀O₁₇:Eu,Mn, Ca₂MgSi₂O₇:Eu, SrGa₂S₄:Eu, (Sr,Ca,Ba,Mg)Ga₂S₄:Eu, and/or Y₂SiO₅:Ce,Tb, the blue-emitting phosphors may be chosen from BaMgAl₁₀O₁₇:Eu, (Sr,Ca,Ba,Mg)₁₀(PO₄)₆Cl₂:Eu, Ca₂B₅O₉Cl:Eu, Sr₂MgSi₂O₇:Eu, (Ca,Sr,Ba)₃MgSi₂O₈:Eu, and/or ZnS:Ag,Al, and the yellow-emitting phosphors may be chosen from (Y,Gd)Al₅O₁₂:Ce, (Y,Gd,Ce,Sm)Al₅O₁₂, (Y,Gd,Ce)Al₃(Al,Ga)₅O₁₂, (Y,Gd,Ce,Sm)Al₃(Al,Ga)₅O₁₂, ZnS:Au,Al, (Ca,Ce)(Si,Al)₁₂(O,N)₁₆, and/or SrAl₂O₄:Eu. Further claimed are UV- and blue light-emitting LED chips having emission peaks in 370-500 nm and pumped phosphors equipped with the above red-emitting ones.

IC ICM C09K011-84

ICS C09K011-08; C09K011-56; C09K011-59; C09K011-62; C09K011-63;

C09K011-64; C09K011-72; C09K011-79; C09K011-80; H01L033-00

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 57

ST blue light source pumping red emitting phosphor; lithium doped lanthanum oxysulfide phosphor pumping source

IT Electroluminescent devices

(Li-doped high-luminance oxysulfide phosphors for LED of low consumption and good color reproduction)

IT Phosphors
(UV-emitting; Li-doped high-luminance oxysulfide phosphors for LED of low consumption and good color reproduction)

IT Phosphors
(blue-emitting; Li-doped high-luminance oxysulfide phosphors for LED of low consumption and good color reproduction)

IT Phosphors
(red-emitting; Li-doped high-luminance oxysulfide phosphors for LED of low consumption and good color reproduction)

IT 7440-54-2, Gadolinium, uses 7440-65-5, Yttrium, uses
RL: DEV (Device component use); MOA (Modifier or additive use); TEM
(Technical or engineered material use); USES (Uses)
(Eu-activated oxysulfide phosphors containing; Li-doped high-luminance oxysulfide phosphors for LED of low consumption and good color reproduction)

IT 243859-81-6P, Europium lanthanum oxide sulfide (Eu_{0.3}La_{1.7}O₂S)
859213-48-2P, Europium lanthanum oxide sulfide (Eu_{0.6}La_{1.4}O₂S)
859213-53-9P, Europium lanthanum yttrium oxide sulfide
(Eu_{0.3}La_{1.5}Y_{0.2}O₂S) 859213-67-5P 859213-68-6P,
Europium lanthanum oxide sulfide (Eu_{0.4}La_{1.6}O₂S)
RL: DEV (Device component use); IMF (Industrial manufacture); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(Li-doped high-luminance oxysulfide phosphors for LED of low consumption and good color reproduction)

IT 7429-90-5, Aluminum, uses 7439-96-5, Manganese, uses 7440-22-4, Silver, uses 7440-27-9, Terbium, uses 7440-45-1, Cerium, uses 7440-50-8, Copper, uses 7440-57-5, Gold, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(activators; Li-doped high-luminance oxysulfide phosphors for LED of low consumption and good color reproduction)

IT 7440-53-1, Europium, uses
RL: DEV (Device component use); MOA (Modifier or additive use); TEM
(Technical or engineered material use); USES (Uses)
(activators; Li-doped high-luminance oxysulfide phosphors for LED of low consumption and good color reproduction)

IT 12505-88-3, Boron calcium chloride oxide (B₅Ca₂ClO₉) 134398-37-1
193335-19-2, Magnesium strontium oxide silicate (MgSr₂O(SiO₃)₂)
244242-39-5
RL: DEV (Device component use); USES (Uses)
(blue-emitting phosphors; Li-doped high-luminance oxysulfide phosphors for LED of low consumption and good color reproduction)

IT 7439-93-2, Lithium, uses
RL: DEV (Device component use); MOA (Modifier or additive use); TEM
(Technical or engineered material use); USES (Uses)
(dopants; Li-doped high-luminance oxysulfide phosphors for LED of low consumption and good color reproduction)

IT 12031-43-5P, Lanthanum oxysulfide (La₂O₂S)
RL: DEV (Device component use); IMF (Industrial manufacture); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(europium activated; Li-doped high-luminance oxysulfide phosphors for LED of low consumption and good color reproduction)

IT 1314-98-3, Zinc sulfide (ZnS), uses 12027-88-2, Yttrium oxide silicate (Y₂O(SiO₄)) 12254-04-5, Aluminum barium magnesium oxide (Al₁₀BaMgO₁₇)
12592-70-0, Gallium strontium sulfide (Ga₂SrS₄) 481055-44-1, Calcium magnesium oxide silicate (Ca_{0.4}Mg_{0.2}O_{0.2}(SiO₃)_{0.4}) 859212-44-5
RL: DEV (Device component use); USES (Uses)
(green-emitting phosphors; Li-doped high-luminance oxysulfide phosphors for LED of low consumption and good color reproduction)

IT 12004-37-4, Aluminum strontium oxide (Al₂SrO₄) 114965-58-1, Aluminum

gadolinium yttrium oxide (Al₅(Gd,Y)3O₁₂) 352033-92-2 859214-65-6
859215-73-9 859216-57-2

RL: DEV (Device component use); USES (Uses)

(yellow-emitting phosphors; Li-doped high-luminance oxysulfide phosphors for LED of low consumption and good color reproduction)

IT 243859-81-6P, Europium lanthanum oxide sulfide (Eu_{0.3}La_{1.7}O₂S)

859213-48-2P, Europium lanthanum oxide sulfide (Eu_{0.6}La_{1.4}O₂S)

859213-53-9P, Europium lanthanum yttrium oxide sulfide

(Eu_{0.3}La_{1.5}Y_{0.2}O₂S) 859213-67-5P 859213-68-6P,

Europium lanthanum oxide sulfide (Eu_{0.4}La_{1.6}O₂S)

RL: DEV (Device component use); IMF (Industrial manufacture); TEM

(Technical or engineered material use); PREP (Preparation); USES (Uses)

(Li-doped high-luminance oxysulfide phosphors for LED of low consumption and good color reproduction)

RN 243859-81-6 HCAPLUS

CN Europium lanthanum oxide sulfide (Eu_{0.3}La_{1.7}O₂S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
S	1	7704-34-9
Eu	0.3	7440-53-1
La	1.7	7439-91-0

RN 859213-48-2 HCAPLUS

CN Europium lanthanum oxide sulfide (Eu_{0.6}La_{1.4}O₂S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
S	1	7704-34-9
Eu	0.6	7440-53-1
La	1.4	7439-91-0

RN 859213-53-9 HCAPLUS

CN Europium lanthanum yttrium oxide sulfide (Eu_{0.3}La_{1.5}Y_{0.2}O₂S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
S	1	7704-34-9
Y	0.2	7440-65-5
Eu	0.3	7440-53-1
La	1.5	7439-91-0

RN 859213-67-5 HCAPLUS

CN Europium gadolinium lanthanum oxide sulfide (Eu_{0.3}Gd_{0.2}La_{1.5}O₂S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
S	1	7704-34-9
Gd	0.2	7440-54-2
Eu	0.3	7440-53-1

La | 1.5 | 7439-91-0

RN 859213-68-6 HCAPLUS

CN Europium lanthanum oxide sulfide (Eu_{0.4}La_{1.6}O₂S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
S	1	7704-34-9
Eu	0.4	7440-53-1
La	1.6	7439-91-0

IT 7440-53-1, Europium, uses

RL: DEV (Device component use); MOA (Modifier or additive use); TEM
(Technical or engineered material use); USES (Uses)
(activators; Li-doped high-luminance oxysulfide phosphors for LED of
low consumption and good color reproduction)

RN 7440-53-1 HCAPLUS

CN Europium (8CI, 9CI) (CA INDEX NAME)

Eu

IT 859212-44-5

RL: DEV (Device component use); USES (Uses)
(green-emitting phosphors; Li-doped high-luminance oxysulfide phosphors
for LED of low consumption and good color reproduction)

RN 859212-44-5 HCAPLUS

CN Barium calcium gallium magnesium strontium sulfide ((Ba,Ca,Mg,Sr)Ga₂S₄)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	4	7704-34-9
Ca	0 - 1	7440-70-2
Ga	2	7440-55-3
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Mg	0 - 1	7439-95-4

L17 ANSWER 12 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2005:514018 HCAPLUS

DN 143:335847

TI Preparation of fluorescent powder for GaN-based light emitting
diode

IN Su, Qiang; Zhang, Xinmin; Xu, Jian

PA Zhongshan Univ., Peop. Rep. China

SO Faming Zhuanli Shenqing Gongkai Shuomingshu, No pp. given
CODEN: CNXXEV

DT Patent

LA Chinese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI CN 1539918	A	20041027	CN 2003-10111931	20031029
PRAI CN 2003-10111931		20031029		

AB The general formula of title fluorescent powder is $(M_{1-x}RE_x)AGa_3S_6O$ (M = Ca, Sr or Ba; A = La, Y or Gd, RE = Eu or the mixture of Eu and other activating agents; $x = 0.01-1$). The fluorescent powder is prepared by proportionally mixing, grinding and solid state reaction at 800-1000° under H₂S. The fluorescent powder can be excited with 300-500 nm light (especially 400 nm and 470 nm) and emit 510-560 nm light, and can be used for green or white GaN-based LED.

IC ICM C09K011-78

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 57

ST fluorescent powder prepn GaN based light emitting diode

IT Electroluminescent devices
Fluorescent substances
Solid state reaction
(preparation of fluorescent powder for GaN-based light emitting diode)

IT 471-34-1, Calcium carbonate, processes 513-77-9, Barium carbonate 1304-28-5, Barium oxide, processes 1305-78-8, Calcium oxide, processes 1308-87-8, Dysprosium oxide 1308-96-9, Europium sesquioxide 1312-81-8, Lanthanum sesquioxide 1314-11-0, Strontium oxide, processes 1314-36-9, Yttrium oxide, processes 1633-05-2, Strontium carbonate 12024-21-4, Gallium sesquioxide 12036-44-1, Thulium sesquioxide 12064-62-9, Gadolinium sesquioxide
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(preparation of fluorescent powder for GaN-based light emitting diode)

IT 7783-06-4, Hydrogen sulfide, uses
RL: NUU (Other use, unclassified); USES (Uses)
(preparation of fluorescent powder for GaN-based light emitting diode)

IT 865377-06-6P 865377-07-7P 865377-08-8P
865377-09-9P 865377-10-2P 865377-11-3P
865377-12-4P 865377-13-5P
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(preparation of fluorescent powder for GaN-based light emitting diode)

IT 1308-96-9, Europium sesquioxide
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(preparation of fluorescent powder for GaN-based light emitting diode)

RN 1308-96-9 HCAPLUS

CN Europium oxide (Eu₂O₃) (6CI, 8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 865377-06-6P 865377-07-7P 865377-08-8P
865377-09-9P 865377-10-2P 865377-11-3P
865377-12-4P 865377-13-5P
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(preparation of fluorescent powder for GaN-based light emitting diode)

RN 865377-06-6 HCAPLUS

CN Calcium europium gallium lanthanum oxide sulfide (Ca_{0.96}Eu_{0.04}Ga₃LaOS₆) (9CI) (CA INDEX NAME)

Component	Ratio	Component
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		Registry Number
=====	=====	=====
O	1	17778-80-2
S	6	7704-34-9
Ca	0.96	7440-70-2
Ga	3	7440-55-3
Eu	0.04	7440-53-1
La	1	7439-91-0

RN 865377-07-7 HCAPLUS

CN Europium gallium strontium yttrium oxide sulfide (Eu_{0.04}Ga₃Sr_{0.96}YOS₆)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	1	17778-80-2
S	6	7704-34-9
Y	1	7440-65-5
Ga	3	7440-55-3
Eu	0.04	7440-53-1
Sr	0.96	7440-24-6

RN 865377-08-8 HCAPLUS

CN Calcium europium gallium yttrium oxide sulfide (Ca_{0.5}Eu_{0.5}Ga₃YOS₆) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	1	17778-80-2
S	6	7704-34-9
Ca	0.5	7440-70-2
Y	1	7440-65-5
Ga	3	7440-55-3
Eu	0.5	7440-53-1

RN 865377-09-9 HCAPLUS

CN Barium europium gallium yttrium oxide sulfide (Ba_{0.96}Eu_{0.04}Ga₃YOS₆) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	1	17778-80-2
S	6	7704-34-9
Y	1	7440-65-5
Ga	3	7440-55-3
Eu	0.04	7440-53-1
Ba	0.96	7440-39-3

RN 865377-10-2 HCAPLUS

CN Europium gadolinium gallium strontium oxide sulfide (Eu_{0.06}GdGa₃Sr_{0.94}OS₆)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	1	17778-80-2
S	6	7704-34-9

Ga	3	7440-55-3
Gd	1	7440-54-2
Eu	0.06	7440-53-1
Sr	0.94	7440-24-6

RN 865377-11-3 HCAPLUS

CN Europium gadolinium gallium strontium thulium oxide sulfide
(Eu_{0.02}GdGa₃Sr_{0.94}Tm_{0.04}OS₆) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	1	17778-80-2
S	6	7704-34-9
Ga	3	7440-55-3
Gd	1	7440-54-2
Eu	0.02	7440-53-1
Tm	0.04	7440-30-4
Sr	0.94	7440-24-6

RN 865377-12-4 HCAPLUS

CN Calcium europium gadolinium gallium strontium oxide sulfide
(Ca_{0.56}Eu_{0.04}GdGa₃Sr_{0.40}OS₆) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	1	17778-80-2
S	6	7704-34-9
Ca	0.56	7440-70-2
Ga	3	7440-55-3
Gd	1	7440-54-2
Eu	0.04	7440-53-1
Sr	0.4	7440-24-6

RN 865377-13-5 HCAPLUS

CN Barium europium gallium strontium oxide sulfide (Ba_{0.4}Eu_{0.04}Ga₃Sr_{0.56}OS₆)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	1	17778-80-2
S	6	7704-34-9
Ga	3	7440-55-3
Eu	0.04	7440-53-1
Ba	0.4	7440-39-3
Sr	0.56	7440-24-6

L17 ANSWER 13 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2005:122520 HCAPLUS

DN 142:228239

TI Deep red phosphor comprising (Ba,Sr,Ca)₃Mg₁₋₂Si₂₀8:Eu²⁺ and white-emitting phosphor blends and light-emitting devices employing the red phosphor

IN Setlur, Anant Achyut; Srivastava, Alok Mani; Comanzo, Holly Ann

PA General Electric Company, USA

SO U.S. Pat. Appl. Publ., 15 pp.

CODEN: USXXCO

DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2005029927	A1	20050210	US 2003-636016	20030807
	US 7026755	B2	20060411		
	WO 2005017066	A1	20050224	WO 2004-US21805	20040708
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
PRAI	US 2003-636016	A	20030807		
AB	White-light-emitting devices are described which include a UV semiconductor light source and a phosphor blend including a blue emitting phosphor, a green emitting phosphor and a deep red emitting phosphor comprising (Ba,Sr,Ca)3MgxSi2O8:Eu2+, where 1≤x≤2. Also disclosed is a phosphor blend comprising a blue emitting phosphor, a green emitting phosphor and a red emitting phosphor comprising (Ba,Sr,Ca)3MgxSi2O8:Eu2+.				
IC	ICM H05B033-00 ICS H01J001-62; H01J063-04				
INCL	313501000; X31-348.7; X31-348.6				
CC	73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties) Section cross-reference(s): 76				
ST	europium doped barium calcium magnesium strontium silicate red phosphor; white light emitting device barium calcium magnesium strontium silicate				
IT	Electroluminescent devices Semiconductor device fabrication (deep red phosphor comprising (Ba,Sr,Ca)3Mg1-2Si2O8:Eu2+ and white-emitting phosphor blends and light-emitting devices employing the red phosphor)				
IT	Phosphors (red-emitting; deep red phosphor comprising (Ba,Sr,Ca)3Mg1-2Si2O8:Eu2+ and white-emitting phosphor blends and light-emitting devices employing the red phosphor)				
IT	Phosphors (white-emitting blend; deep red phosphor comprising (Ba,Sr,Ca)3Mg1-2Si2O8:Eu2+ and white-emitting phosphor blends and light-emitting devices employing the red phosphor)				
IT	127575-65-9, Aluminum gallium indium nitride RL: DEV (Device component use); USES (Uses) (LED; deep red phosphor comprising (Ba,Sr,Ca)3Mg1-2Si2O8:Eu2+ and white-emitting phosphor blends and light-emitting devices employing the red phosphor)				
IT	841303-42-2 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses) (deep red phosphor comprising (Ba,Sr,Ca)3Mg1-2Si2O8:Eu2+ and white-emitting phosphor blends and light-emitting devices employing the red phosphor)				

IT 7439-98-7, Molybdenum, uses 7440-09-7, Potassium, uses 7440-27-9, Terbium, uses 7440-36-0, Antimony, uses 7440-45-1, Cerium, uses 7440-69-9, Bismuth, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (dopant; deep red phosphor comprising (Ba,Sr,Ca)3Mg1-2Si2O8:Eu2+ and white-emitting phosphor blends and light-emitting devices employing the red phosphor)

IT 7439-96-5, Manganese, properties 7440-53-1, Europium, properties
 RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (dopant; deep red phosphor comprising (Ba,Sr,Ca)3Mg1-2Si2O8:Eu2+ and white-emitting phosphor blends and light-emitting devices employing the red phosphor)

IT 12159-91-0, Germanium magnesium fluoride oxide (Ge2Mg8F2O11) 12525-03-0, Calcium lanthanum sulfide (CaLa2S4) 12535-38-5, Strontium yttrium sulfide (SrY2S4) 20775-37-5, Barium magnesium silicate (Ba3MgSi2O8) 76125-60-5, Aluminum strontium oxide (Al14Sr4O25) 82992-94-7, Calcium strontium sulfide ((Ca,Sr)S) 97358-83-3, Aluminum barium oxide (Al8BaO13) 99533-22-9, Calcium magnesium chloride silicate (Ca8MgCl2(SiO4)4) 173525-28-5 223757-06-0, Gadolinium sodium borate oxide (Gd2Na2(BO3)2O) 473908-57-5 675819-82-6, Aluminum barium calcium strontium oxide (Al2(Ba,Ca,Sr)O4) 675819-83-7 675819-84-8, Barium calcium strontium silicate ((Ba,Ca,Sr)2(SiO4)) 675819-86-0 675819-90-6 675819-91-7 841303-43-3 841303-44-4 841303-45-5, Calcium strontium borate phosphate ((Ca,Sr)10(BO2)2(PO4)6) 841303-46-6 841303-47-7, Lutetium tungsten yttrium oxide ((Lu,Y)2WO6) 841303-48-8 841303-50-2 841303-51-3
 RL: DEV (Device component use); USES (Uses)
 (doped phosphor; deep red phosphor comprising (Ba,Sr,Ca)3Mg1-2Si2O8:Eu2+ and white-emitting phosphor blends and light-emitting devices employing the red phosphor)

IT 244242-39-5
 RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (europium, manganese-codoped phosphor; deep red phosphor comprising (Ba,Sr,Ca)3Mg1-2Si2O8:Eu2+ and white-emitting phosphor blends and light-emitting devices employing the red phosphor)

IT 7440-53-1, Europium, properties
 RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (dopant; deep red phosphor comprising (Ba,Sr,Ca)3Mg1-2Si2O8:Eu2+ and white-emitting phosphor blends and light-emitting devices employing the red phosphor)

RN 7440-53-1 HCAPLUS
 CN Europium (8CI, 9CI) (CA INDEX NAME)

Eu

IT 675819-86-0
 RL: DEV (Device component use); USES (Uses)
 (doped phosphor; deep red phosphor comprising (Ba,Sr,Ca)3Mg1-2Si2O8:Eu2+ and white-emitting phosphor blends and light-emitting devices employing the red phosphor)

RN 675819-86-0 HCAPLUS
 CN Aluminum barium calcium gallium indium strontium sulfide ((Al,Ga,In)2(Ba,Ca,Sr)S4) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	4	7704-34-9
In	0 - 2	7440-74-6
Ca	0 - 1	7440-70-2
Ga	0 - 2	7440-55-3
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Al	0 - 2	7429-90-5

L17 ANSWER 14 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2004:1058017 HCAPLUS

DN 142:13516

TI Luminescence conversion LED

PA Patent-Treuhand-Gesellschaft fuer Elektrische Gluehlampen MbH, Germany;
OSRAM Opto Semiconductors GmbH

SO Ger. Gebrauchsmusterschrift, 4 pp.
CODEN: GGXXFR

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	---	----	-----	-----
PI	DE 20023554	U1	20041209	DE 2000-20023554	20000728
PRAI	DE 2000-20023554		20000728		

AB Luminescence conversion **light**-emitting devices (LEDs) for which the primary emission is in the 370-430 nm range are described which employ selected phosphors to convert the primary emission into longer wavelength visible radiation. Preferably, the LED is a Ga(In,Al)N-based LED.

IC ICM H01L033-00

CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76

ST luminescence conversion **light** emitting device

IT Electroluminescent devices

(luminescence conversion **light**-emitting devices)

IT 7440-22-4, Silver, uses 14701-21-4, Silver 1+, uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(cadmium zinc sulfide doped with; luminescence conversion **light**-emitting devices)

IT 12254-04-5, Barium magnesium aluminate (BaMgAl10O17)

RL: DEV (Device component use); USES (Uses)

(cerium- and europium- and terbium-doped; luminescence conversion **light**-emitting devices)

IT 59977-54-7, Yttrium nitride silicate (Y5N(SiO4)3) 62361-78-8, Silicon yttrium nitride oxide (SiYNO2) 799241-05-7

RL: DEV (Device component use); USES (Uses)

(cerium-doped; luminescence conversion **light**-emitting devices)

IT 7789-75-5, Calcium difluoride, uses 12004-37-4, Strontium aluminate

(SrAl2O4) 13968-67-7, Barium silicate (BaSi2O5) 59668-41-6, Strontium magnesium aluminate (SrMgAl10O17) 74505-88-7, Barium bromide silicate (Ba5Br6(SiO4)) 76125-60-5, Strontium aluminate (Sr4Al14O25)

99533-22-9, Calcium magnesium chloride silicate (Ca8MgCl2(SiO4)4)

108252-12-6, Aluminum barium oxide (Al12Ba1.29O19.29) 156440-57-2, Boron

phosphorus strontium oxide 211571-62-9, Barium strontium magnesium

aluminate (Ba0-1Sr0-1MgAl10O17) 396078-39-0, Aluminum barium strontium

oxide (Al₆(Ba,Sr)₂O₁₁) 440673-55-2 799241-03-5 799241-04-6
 RL: DEV (Device component use); USES (Uses)
 (europium-doped; luminescence conversion light-emitting devices)

IT 13812-81-2, Strontium phosphate (Sr₂P₂O₇) 112004-06-5, Aluminum barium oxide (Al₁₂Ba_{0.82}O_{18.82}) 127575-65-9, Aluminum gallium indium nitride ((Al,Ga,In)N) 244242-39-5 396078-41-4, Aluminum barium europium oxide (Al_{11.11}Ba_{0.57}Eu_{0.09}O_{17.34}) 799241-06-8 799241-07-9 799241-08-0 799241-10-4 799241-11-5
 RL: DEV (Device component use); USES (Uses)
 (luminescence conversion light-emitting devices)

IT 7439-96-5, Manganese, uses 7440-27-9, Terbium, uses 7440-45-1, Cerium, uses 7440-69-9, Bismuth, uses 16397-91-4, Manganese 2+, uses 18923-26-7, Cerium 3+, uses 19768-33-3, Manganese 4+, uses 22541-20-4, Terbium 3+, uses 23713-46-4, Bismuth 3+, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (luminescence conversion light-emitting devices)

IT 39373-08-5, Germanium magnesium fluoride oxide (Ge₁₅Mg₅₆F₂₀₀76)
 RL: DEV (Device component use); USES (Uses)
 (manganese-activated; luminescence conversion light-emitting devices)

IT 7440-53-1, Europium, uses 16910-54-6, Europium 2+, uses 22541-18-0, Europium 3+, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (phosphors doped with; luminescence conversion light-emitting devices)

IT 12442-27-2, Cadmium zinc sulfide ((Cd,Zn)S)
 RL: DEV (Device component use); USES (Uses)
 (silver-doped; luminescence conversion light-emitting devices)

IT 396078-41-4, Aluminum barium europium oxide (Al_{11.11}Ba_{0.57}Eu_{0.09}O_{17.34}) 799241-08-0
 RL: DEV (Device component use); USES (Uses)
 (luminescence conversion light-emitting devices)

RN 396078-41-4 HCAPLUS

CN Aluminum barium europium oxide (Al_{11.11}Ba_{0.57}Eu_{0.09}O_{17.34}) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	17.34	17778-80-2
Eu	0.09	7440-53-1
Ba	0.57	7440-39-3
Al	11.11	7429-90-5

RN 799241-08-0 HCAPLUS

CN Aluminum barium calcium gallium indium magnesium strontium zinc sulfide ((Al,Ga,In)(Ba,Ca,Mg,Sr,Zn)₄) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	4	7704-34-9
In	0 - 1	7440-74-6
Ca	0 - 1	7440-70-2
Zn	0 - 1	7440-66-6
Ga	0 - 1	7440-55-3

Ba		0 - 1		7440-39-3
Sr		0 - 1		7440-24-6
Mg		0 - 1		7439-95-4
Al		0 - 1		7429-90-5

IT 7440-53-1, Europium, uses 16910-54-6, Europium 2+, uses
 22541-18-0, Europium 3+, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES
 (Uses)
 (phosphors doped with; luminescence conversion light-emitting
 devices)
 RN 7440-53-1 HCAPLUS
 CN Europium (8CI, 9CI) (CA INDEX NAME)

Eu

RN 16910-54-6 HCAPLUS
 CN Europium, ion (Eu2+) (8CI, 9CI) (CA INDEX NAME)

Eu2+

RN 22541-18-0 HCAPLUS
 CN Europium, ion (Eu3+) (8CI, 9CI) (CA INDEX NAME)

Eu3+

L17 ANSWER 15 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 2004:877829 HCAPLUS
 DN 141:322413
 TI Methods and devices using high efficiency alkaline earth metal
 thiogallate-based phosphors
 IN Tian, Yongchi; Zaremba, Diane; Yocom, Perry Niel
 PA Sarnoff Corporation, USA; Stanley Electric Co., Ltd.
 SO U.S. Pat. Appl. Publ., 8 pp.
 CODEN: USXXCO
 DT Patent
 LA English
 FAN.CNT 2

application

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004206973	A1	20041021	US 2004-823288	20040413
	WO 2004095493	A2	20041104	WO 2004-US11926	20040415
	WO 2004095493	A3	20041216		
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW:	BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN,				

TD, TG
 WO 2005026285 A2 20050324 WO 2004-US11927 20040415
 WO 2005026285 A3 20051117
 W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
 RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
 EP 1615981 A2 20060118 EP 2004-809336 20040415
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR
 EP 1620524 A2 20060201 EP 2004-759974 20040415
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK
 CN 1788067 A 20060614 CN 2004-80009774 20040415
 PRAI US 2003-463883P P 20030421
 US 2004-823288 A 20040413
 WO 2004-US11926 W 20040415
 WO 2004-US11927 W 20040415
 AB Provided, among other things, is a light emitting device comprising: a light output; a light source producing light including wavelengths of 530 nm or less; and a wavelength transformer located between the light source and the light output, comprising $\text{Sr}_{1-x}\text{Ca}_x\text{Ga}_2\text{S}_4:\text{yEu}^{2+} \cdot \text{zGa}_2\text{S}_3$, where x is 0.0001 to 1, y is a value defining sufficient Eu^{2+} to provide luminescent emission, and z is 0.0001 to 0.2 based on the mole amount of $\text{Sr}_x\text{Ca}_{1-x}\text{Ga}_2\text{S}_4$, the wavelength transformer effective to increase the light at the light output having wavelength between 535 nm and 560 nm.
 IC ICM H05B033-00
 ICS C09K011-62
 INCL 257098000; 257080000; 427066000; 427067000; 313112000; 428690000; 428917000; 252301400S
 CC 73-12 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
 Section cross-reference(s): 76
 ST method device high efficiency alk earth metal thiogallate phosphor
 IT Electroluminescent devices
 Phosphors
 (methods and devices using high efficiency alkaline earth metal thiogallate-based phosphors)
 IT Sulfides, properties
 RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
 (methods and devices using high efficiency alkaline earth metal thiogallate-based phosphors)
 IT 16910-54-6P, Europium(2+), properties
 RL: CPS (Chemical process); DEV (Device component use); IMF (Industrial manufacture); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)
 (methods and devices using high efficiency alkaline earth metal thiogallate-based phosphors)

IT 12024-22-5P, Gallium sulfide(ga2s3) 159832-15-2P, Calcium gallium strontium sulfide(ca0.5ga2sr0.5s4) 159832-16-3P, Calcium gallium strontium sulfide(ca0.8ga2sr0.2s4) 185537-42-2P, Calcium gallium strontium sulfide ((Ca,Sr)Ga2S4) 193695-91-9P, Calcium gallium strontium sulfide(ca0.4ga2sr0.6s4) 193695-92-0P, Calcium gallium strontium sulfide(ca0.6ga2sr0.4s4) 768386-18-1P, Calcium gallium strontium sulfide (Ca0.7Ga2Sr0.3S4)
 RL: CPS (Chemical process); DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)
 (methods and devices using high efficiency alkaline earth metal thiogallate-based phosphors)

IT 16910-54-6P, Europium(2+), properties
 RL: CPS (Chemical process); DEV (Device component use); IMF (Industrial manufacture); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)
 (methods and devices using high efficiency alkaline earth metal thiogallate-based phosphors)

RN 16910-54-6 HCAPLUS
 CN Europium, ion (Eu2+) (8CI, 9CI) (CA INDEX NAME)

Eu2+

IT 159832-15-2P, Calcium gallium strontium sulfide(ca0.5ga2sr0.5s4) 159832-16-3P, Calcium gallium strontium sulfide(ca0.8ga2sr0.2s4) 185537-42-2P, Calcium gallium strontium sulfide ((Ca,Sr)Ga2S4) 193695-91-9P, Calcium gallium strontium sulfide(ca0.4ga2sr0.6s4) 193695-92-0P, Calcium gallium strontium sulfide(ca0.6ga2sr0.4s4) 768386-18-1P, Calcium gallium strontium sulfide (Ca0.7Ga2Sr0.3S4)
 RL: CPS (Chemical process); DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)
 (methods and devices using high efficiency alkaline earth metal thiogallate-based phosphors)

RN 159832-15-2 HCAPLUS
 CN Calcium gallium strontium sulfide (Ca0.5Ga2Sr0.5S4) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
S	4	7704-34-9
Ca	0.5	7440-70-2
Ga	2	7440-55-3
Sr	0.5	7440-24-6

RN 159832-16-3 HCAPLUS
 CN Calcium gallium strontium sulfide (Ca0.8Ga2Sr0.2S4) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
S	4	7704-34-9
Ca	0.8	7440-70-2
Ga	2	7440-55-3
Sr	0.2	7440-24-6

RN 185537-42-2 HCAPLUS

CN Calcium gallium strontium sulfide ((Ca,Sr)Ga₂S₄) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	4	7704-34-9
Ca	0 - 1	7440-70-2
Ga	2	7440-55-3
Sr	0 - 1	7440-24-6

RN 193695-91-9 HCAPLUS

CN Calcium gallium strontium sulfide (Ca_{0.4}Ga₂Sr_{0.6}S₄) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	4	7704-34-9
Ca	0.4	7440-70-2
Ga	2	7440-55-3
Sr	0.6	7440-24-6

RN 193695-92-0 HCAPLUS

CN Calcium gallium strontium sulfide (Ca_{0.6}Ga₂Sr_{0.4}S₄) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	4	7704-34-9
Ca	0.6	7440-70-2
Ga	2	7440-55-3
Sr	0.4	7440-24-6

RN 768386-18-1 HCAPLUS

CN Calcium gallium strontium sulfide (Ca_{0.7}Ga₂Sr_{0.3}S₄) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	4	7704-34-9
Ca	0.7	7440-70-2
Ga	2	7440-55-3
Sr	0.3	7440-24-6

L17 ANSWER 16 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2004:858412 HCAPLUS

DN 142:186114

TI Fluorescent powder for GaN base LED and its manufacture

IN Su, Qiang; Xu, Jian; Zhang, Jianhui

PA Zhongshan University, Peop. Rep. China

SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 8 pp.

CODEN: CNXXEV

DT Patent

LA Chinese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
PI CN 1412271	A	20030423	CN 2002-152035	20021125

PRAI CN 2002-152035

20021125

AB The fluorescent powder is $(AxB_{1-x}S)(B_2S_3)_y$ or $(B_2S_3)_y-z(C_2S_3)_z$, where A = bivalent metal ions, B =Al, Ga, and/or In, C=Gd, Y, and/or La, R=Eu or Eu and other activating ions, x= 0.001-1, yr=1-5, and z=0.01-1. The fluorescent powder is manufactured by calcining a powdered mixture of the component

elements and/or their compds. at 800-1200°C in H₂S, CS₂, H₂ + H₂S, or C + S atmospheric one or more than one time.

IC ICM C09K011-84

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST gallium nitride fluorescent powder light emitting device manuf

IT Electroluminescent devices

Phosphors

(fluorescent powder for GaN base LED and its manufacture)

IT 25617-97-4, Gallium nitride

RL: DEV (Device component use); USES (Uses)

(fluorescent powder for GaN base LED and its manufacture)

IT 832731-63-2, Europium gallium strontium sulfide

(Eu_{0.01}Ga₂Sr_{0.99}S₄) 832731-64-3 832731-65-4, Calciumeuropium gallium sulfide (Ca_{0.9}Eu_{0.1}Ga_{2.5}S_{4.75}) 832731-66-5

832731-67-6, Calcium europium gallium yttrium sulfide

(Ca_{0.96}Eu_{0.04}Ga_{1.2}Y_{0.8}S₄) 832731-68-7

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(fluorescent powder for GaN base LED and its manufacture)

IT 832731-63-2, Europium gallium strontium sulfide

(Eu_{0.01}Ga₂Sr_{0.99}S₄) 832731-64-3 832731-65-4, Calciumeuropium gallium sulfide (Ca_{0.9}Eu_{0.1}Ga_{2.5}S_{4.75}) 832731-66-5

832731-67-6, Calcium europium gallium yttrium sulfide

(Ca_{0.96}Eu_{0.04}Ga_{1.2}Y_{0.8}S₄) 832731-68-7

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(fluorescent powder for GaN base LED and its manufacture)

RN 832731-63-2 HCAPLUS

CN Europium gallium strontium sulfide (Eu_{0.01}Ga₂Sr_{0.99}S₄) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====		
S	4	7704-34-9
Ga	2	7440-55-3
Eu	0.01	7440-53-1
Sr	0.99	7440-24-6

RN 832731-64-3 HCAPLUS

CN Europium gallium strontium thulium sulfide (Eu_{0.02}Ga₂Sr_{0.96}Tm_{0.02}S₄) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====		
S	4	7704-34-9
Ga	2	7440-55-3
Eu	0.02	7440-53-1
Tm	0.02	7440-30-4
Sr	0.96	7440-24-6

RN 832731-65-4 HCAPLUS

CN Calcium europium gallium sulfide (Ca_{0.9}Eu_{0.1}Ga_{2.5}S_{4.75}) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	4.75	7704-34-9
Ca	0.9	7440-70-2
Ga	2.5	7440-55-3
Eu	0.1	7440-53-1

RN 832731-66-5 HCAPLUS

CN Aluminum calcium europium gallium strontium sulfide
(Al_{0.4}Ca_{0.45}Eu_{0.1}Ga_{3.6}Sr_{0.45}S₇) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	7	7704-34-9
Ca	0.45	7440-70-2
Ga	3.6	7440-55-3
Eu	0.1	7440-53-1
Sr	0.45	7440-24-6
Al	0.4	7429-90-5

RN 832731-67-6 HCAPLUS

CN Calcium europium gallium yttrium sulfide (Ca_{0.96}Eu_{0.04}Ga_{1.2}Y_{0.8}S₄) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	4	7704-34-9
Ca	0.96	7440-70-2
Y	0.8	7440-65-5
Ga	1.2	7440-55-3
Eu	0.04	7440-53-1

RN 832731-68-7 HCAPLUS

CN Calcium europium gadolinium gallium yttrium sulfide
(Ca_{0.96}Eu_{0.04}Gd_{0.3}Ga₃Y_{0.7}S₇) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	7	7704-34-9
Ca	0.96	7440-70-2
Y	0.7	7440-65-5
Ga	3	7440-55-3
Gd	0.3	7440-54-2
Eu	0.04	7440-53-1

L17 ANSWER 17 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2004:310735 HCAPLUS

DN 140:347185

TI Screen printing process for deposition of light-emitting base
layer using a photoresist

IN Chua, Bee Yin Janet; Tan, Boon Chun
 PA Agilent Technologies, Inc., Malay.
 SO U.S. Pat. Appl. Publ., 10 pp.
 CODEN: USXXCO
 DT Patent
 LA English
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004072106	A1	20040415	US 2002-269276	20021011
	US 6869753	B2	20050322		
	JP 2004153261	A2	20040527	JP 2003-351860	20031010
PRAI	US 2002-269276	A	20021011		

AB Methods for selective deposition of light-emitting film on a base layer are discussed which entail providing a base layer having a first region and a second region; applying a photoresist layer to the base layer; irradiating the photoresist layer to form a soluble portion on the first region and an insol. portion on the second region; dissolving the soluble portion from the first region; and applying a light-emitting film to the first region. Systems comprising means for employing the methods are also discussed.

IC ICM G03F007-00

INCL 430320000; 430321000; 430322000; 430324000

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
 Section cross-reference(s): 74

ST screen printing electroluminescent layer selective deposition photoresist

IT Electroluminescent devices

(base layer; screen printing process for deposition of light-emitting base layer using photoresist)

IT Luminescent substances

(electroluminescent; screen printing process for deposition of light-emitting base layer using photoresist)

IT Coating materials

(masking; screen printing process for deposition of light-emitting base layer using photoresist)

IT Inks

(polymer-based; screen printing process for deposition of light-emitting base layer using photoresist)

IT Cutting

(sawing; screen printing process for deposition of light-emitting base layer using photoresist)

IT Dissolution

Phosphors

Photoresists

Screen printing

Spraying

Vapor deposition process

(screen printing process for deposition of light-emitting base layer using photoresist)

IT Epoxy resins, uses

RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(screen printing process for deposition of light-emitting base layer using photoresist)

IT Coating process

(spin; screen printing process for deposition of light-emitting base layer using photoresist)

IT 12442-27-2, Cadmium zinc sulfide (Cd0-1Zn0-1S)

RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(Ag-doped phosphor; screen printing process for deposition of light-emitting base layer using photoresist)

IT 13566-12-6, Yttrium vanadate (YVO4)
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(Eu,Bi-codoped phosphor; screen printing process for deposition of light-emitting base layer using photoresist)

IT 12254-04-5, Aluminum barium magnesium oxide (Al10BaMgO17)
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(Eu,Mn-codoped phosphor; screen printing process for deposition of light-emitting base layer using photoresist)

IT 1314-96-1, Strontium sulfide (SrS) 55134-50-4, Aluminum barium magnesium oxide (Al16BaMg2O27) 82992-94-7, Calcium strontium sulfide ((Ca,Sr)S)
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(Eu-doped phosphor; screen printing process for deposition of light-emitting base layer using photoresist)

IT 12063-98-8, Gallium phosphide (GaP), uses 25617-97-4, Gallium nitride (GaN) 107102-89-6, Aluminum gallium indium phosphide 120994-23-2, Gallium indium nitride (GaInN) 208576-35-6, Aluminum gallium indium arsenide phosphide
RL: DEV (Device component use); USES (Uses)
(LED base layer; screen printing process for deposition of light-emitting base layer using photoresist)

IT 7439-96-5, Manganese, uses 7440-10-0, Praseodymium, uses 7440-22-4, Silver, uses 7440-45-1, Cerium, uses 7440-50-8, Copper, uses 7440-53-1, Europium, uses 7440-69-9, Bismuth, uses
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(dopant; screen printing process for deposition of light-emitting base layer using photoresist)

IT 1314-98-3, Zinc sulfide (ZnS), uses 12005-21-9, Yttrium aluminate (Y3Al5O12)
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(doped phosphor; screen printing process for deposition of light-emitting base layer using photoresist)

IT 20548-54-3, Calcium sulfide (CaS)
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(doped phosphors; screen printing process for deposition of light-emitting base layer using photoresist)

IT 272792-87-7
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(europium-doped phosphor; screen printing process for deposition of light-emitting base layer using photoresist)

IT 7440-21-3, Silicon, uses
RL: PEP (Physical, engineering or chemical process); PYP (Physical

process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (gel; screen printing process for deposition of light
 -emitting base layer using photoresist)
 IT 679844-78-1, Aluminum cerium terbium oxide (Al₅(Ce,Tb)₃O₁₂)
 RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (phosphor; screen printing process for deposition of light
 -emitting base layer using photoresist)
 IT 7440-53-1, Europium, uses
 RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (dopant; screen printing process for deposition of light
 -emitting base layer using photoresist)
 RN 7440-53-1 HCAPLUS
 CN Europium (8CI, 9CI) (CA INDEX NAME)

Eu

IT 272792-87-7
 RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (europium-doped phosphor; screen printing process for deposition of light-emitting base layer using photoresist)
 RN 272792-87-7 HCAPLUS
 CN Aluminum barium calcium gallium strontium sulfide ((Al,Ga)₂(Ba,Ca,Sr)₄S₄) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	4	7704-34-9
Ca	0 - 1	7440-70-2
Ga	0 - 2	7440-55-3
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Al	0 - 2	7429-90-5

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 18 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 2004:251924 HCAPLUS
 DN 140:294463
 TI Phosphor blends and backlight sources for color liquid crystal displays
 IN Setlur, Anant Achyut; Srivastava, Alok Mani; Comanzo, Holly Ann
 PA General Electric Company, USA
 SO U.S. Pat. Appl. Publ., 11 pp.
 CODEN: USXXCO
 DT Patent
 LA English
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
PI US 2004056990	A1	20040325	US 2002-65181	20020924

US 6809781 B2 20041026
 JP 2004168996 A2 20040617 JP 2003-329248 20030922
 EP 1403355 A1 20040331 EP 2003-255943 20030923
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK
 KR 2004026628 A 20040331 KR 2003-65794 20030923
 CN 1495486 A 20040512 CN 2003-158772 20030924
 PRAI US 2002-65181 A 20020924
 AB Phosphor comps. which comprises at least one phosphor emitting in each of
 the blue, green, and red regions of the visible spectrum are described for
 use in a backlight source of a color liquid crystal display. Liquid crystal
 displays are described which include a backlighting system comprising a
 backlight source emitting light having a first spectrum at least
 in a range from $\approx 300 - 450$ nm; and the above phosphor composition
 disposed to absorb light of at least a portion of the first
 spectrum and to emit light having a second spectrum different
 from the first spectrum; and a liquid crystal material disposed to receive
 light having the second spectrum.
 IC ICM C09K011-08
 INCL 349069000; 252301400R; 252301400P; 252301400H; 252301400F; 252301600F;
 252301600P; 252301400S
 CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related
 Properties)
 Section cross-reference(s): 74
 ST phosphor blend backlight source color liq crystal display
 IT Light sources
 (backlight; phosphor blends and backlight sources for liquid crystal
 displays)
 IT Phosphors
 (blends; phosphor blends and backlight sources for liquid crystal
 displays)
 IT Phosphors
 (blue-emitting; phosphor blends and backlight sources for liquid crystal
 displays)
 IT Liquid crystal displays
 (color; phosphor blends and backlight sources for liquid crystal
 displays)
 IT Polysiloxanes, uses
 RL: DEV (Device component use); USES (Uses)
 (epoxy, phosphor dispersed in; phosphor blends and backlight sources
 for liquid crystal displays)
 IT Phosphors
 (green-emitting; phosphor blends and backlight sources for liquid crystal
 displays)
 IT Optical materials
 (light-scattering particles dispersed in polymer; phosphor
 blends and backlight sources for liquid crystal displays)
 IT Acrylic polymers, uses
 Epoxy resins, uses
 Polysiloxanes, uses
 RL: DEV (Device component use); USES (Uses)
 (phosphor dispersed in; phosphor blends and backlight sources for liquid
 crystal displays)
 IT Transparent materials
 (polymers, phosphor dispersed in; phosphor blends and backlight sources
 for liquid crystal displays)
 IT Epoxy resins, uses
 RL: DEV (Device component use); USES (Uses)
 (polysiloxane-, phosphor dispersed in; phosphor blends and backlight
 sources for liquid crystal displays)

- IT Phosphors
(red-emitting; phosphor blends and backlight sources for liquid crystal displays)
- IT Electroluminescent devices
(semiconductor or organic, backlight source; phosphor blends and backlight sources for liquid crystal displays)
- IT 675819-83-7
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(Ce,Tb-codoped; phosphor blends and backlight sources for liquid crystal displays)
- IT 12525-03-0, Calcium lanthanum sulfide (CaLa2S4)
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(Ce-doped; phosphor blends and backlight sources for liquid crystal displays)
- IT 173525-28-5, Gadolinium lanthanum lutetium yttrium oxide sulfide (Gd,La,Lu,Y)2O2S 675819-90-6 675819-91-7
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(Eu,Bi-codoped; phosphor blends and backlight sources for liquid crystal displays)
- IT 675819-89-3
RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(Eu,Mn-codoped; phosphor blends and backlight sources for liquid crystal displays)
- IT 675819-88-2 675819-92-8
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(Eu,Mn-codoped; phosphor blends and backlight sources for liquid crystal displays)
- IT 1314-96-1, Strontium sulfide (SrS) 12535-38-5, Strontium yttrium sulfide (SrY2S4) 82992-94-7, Calcium strontium sulfide ((Ca,Sr)S)
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(Eu-doped; phosphor blends and backlight sources for liquid crystal displays)
- IT 12159-91-0, Germanium magnesium fluoride oxide (GeMg4FO5.5)
RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(Mn-doped; phosphor blends and backlight sources for liquid crystal displays)
- IT 675819-87-1
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(cerium-doped; phosphor blends and backlight sources for liquid crystal displays)
- IT 7439-96-5, Manganese, uses 7440-27-9, Terbium, uses 7440-45-1, Cerium, uses 7440-53-1, Europium, uses 7440-69-9, Bismuth, uses 16397-91-4, Manganese(2+), uses 16910-54-6, Europium(2+), uses 18923-26-7, Cerium(3+), uses 19768-33-3, Manganese(4+), uses 22541-18-0, Europium(3+), uses 22541-20-4, Terbium(3+), uses 23713-46-4, Bismuth(3+), uses
RL: DEV (Device component use); MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
(dopant; phosphor blends and backlight sources for liquid crystal displays)
- IT 675819-79-1
RL: DEV (Device component use); PRP (Properties); TEM (Technical or

engineered material use); USES (Uses)
 (doped; phosphor blends and backlight sources for liquid crystal displays)

IT 473908-57-5
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (doped; phosphor blends and backlight sources for liquid crystal displays)

IT 20775-37-5, Barium magnesium silicate (Ba₃MgSi₂O₈) 76125-60-5, Aluminum strontium oxide (Al₁₄Sr₄O₂₅) 97358-83-3, Aluminum barium oxide (Al₈BaO₁₃) 144920-98-9, Strontium borate metaphosphate oxide (Sr₂(BO₃)_{0.32}(PO₃)_{1.68}O_{0.68}) 675819-80-4, Boron calcium strontium oxide phosphate (B₀₋₂(Ca,Sr)₁₀₀₀₋₃(PO₄)₆) 675819-81-5, Strontium chloride oxide silicate (Sr₄Cl_{400.5}(Si₂O₅)_{1.5}) 675819-82-6, Aluminum barium calcium strontium oxide (Al₂(Ba,Ca,Sr)₀₄) 675819-84-8, Barium calcium strontium silicate ((Ba,Ca,Sr)₂(SiO₄)) 675819-85-9 675819-86-0
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (europium-doped; phosphor blends and backlight sources for liquid crystal displays)

IT 675819-78-0
 RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (phosphor blends and backlight sources for liquid crystal displays)

IT 7440-53-1, Europium, uses 16910-54-6, Europium(2+), uses 22541-18-0, Europium(3+), uses
 RL: DEV (Device component use); MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
 (dopant; phosphor blends and backlight sources for liquid crystal displays)

RN 7440-53-1 HCAPLUS
 CN Europium (8CI, 9CI) (CA INDEX NAME)

Eu

RN 16910-54-6 HCAPLUS
 CN Europium, ion (Eu²⁺) (8CI, 9CI) (CA INDEX NAME)

Eu²⁺

RN 22541-18-0 HCAPLUS
 CN Europium, ion (Eu³⁺) (8CI, 9CI) (CA INDEX NAME)

Eu³⁺

IT 675819-86-0
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (europium-doped; phosphor blends and backlight sources for liquid crystal displays)

RN 675819-86-0 HCAPLUS
 CN Aluminum barium calcium gallium indium strontium sulfide ((Al,Ga,In)₂(Ba,Ca,Sr)_{S4}) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	4	7704-34-9
In	0 - 2	7440-74-6
Ca	0 - 1	7440-70-2
Ga	0 - 2	7440-55-3
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Al	0 - 2	7429-90-5

IT 675819-78-0

RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(phosphor blends and backlight sources for liquid crystal displays)

RN 675819-78-0 HCAPLUS

CN Europium magnesium manganese strontium (diphosphate)
(Eu0.2Mg0.22Mn0.2Sr1.58(P2O7)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O7P2	1	14000-31-8
Eu	0.2	7440-53-1
Sr	1.58	7440-24-6
Mn	0.2	7439-96-5
Mg	0.22	7439-95-4

RE.CNT 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 19 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2003:777039 HCAPLUS

DN 139:299004

TI Mechanically flexible organic electroluminescent device with directional
light emission

IN Duggal, Anil Raj; Shiang, Joseph John; Schaepkens, Marc

PA General Electric Company, USA

SO U.S. Pat. Appl. Publ., 15 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	US 2003184219	A1	20031002	US 2002-113137	20020329
	US 6891330	B2	20050510		
	WO 2003100832	A2	20031204	WO 2003-US6723	20030305
	WO 2003100832	A3	20040318		
	W: CN, JP, KR				
	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,				
	IT, LU, MC, NL, PT, RO, SE, SI, SK, TR				
	EP 1493195	A2	20050105	EP 2003-755318	20030305
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,				
	IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, SK				
	JP 2005522016	T2	20050721	JP 2004-508389	20030305
	CN 1656626	A	20050817	CN 2003-812069	20030305
PRAI	US 2002-113137	A	20020329		
	WO 2003-US6723	W	20030305		
AB	A light-emitting device is described comprising a flexible				

substantially transparent substrate having a first surface and a second surface, at least one of the surfaces being coated with a multilayer barrier coating which comprises at least one sublayer of a substantially transparent organic polymer and at least one sublayer of a substantially transparent inorg. material; an organic electroluminescent (EL) member which comprises an organic EL layer disposed between two electrodes and is disposed on the flexible substantially transparent substrate; and a reflective metal layer disposed on the organic EL member opposite to the flexible substantially transparent substrate. The reflective metal layer and the multilayer barrier coating form a seal around the organic EL member to reduce the degradation of the device due to environmental elements. A method of fabricating the light-emitting device is also described.

IC ICM H05B033-00

INCL 313506000

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 76

ST flexible substrate org electroluminescent device fabrication

IT Acrylic polymers, uses

Polyesters, uses

RL: DEV (Device component use); USES (Uses)

(barrier coating; mech. flexible organic electroluminescent device with directional light emission)

IT Electroluminescent devices

Semiconductor device fabrication

(mech. flexible organic electroluminescent device with directional light emission)

IT Polysilanes

RL: DEV (Device component use); USES (Uses)

(organic EL layer; mech. flexible organic electroluminescent device with directional light emission)

IT 107-13-1, Acrylonitrile, uses 9002-85-1, Poly(vinylidene chloride)

24981-14-4, Poly(vinyl fluoride) 25038-59-9, Polyethyleneterephthalate, uses 25722-33-2, Parylene 93409-71-3, Glyoxal-vinyl alcohol copolymer

RL: DEV (Device component use); USES (Uses)

(barrier coating; mech. flexible organic electroluminescent device with directional light emission)

IT 7440-45-1, Cerium, uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(cathode, light emitting layer; mech. flexible organic electroluminescent device with directional light emission)

IT 7440-53-1, Europium, uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(cathode, reflecting layer, light emitting layer; mech. flexible organic electroluminescent device with directional light emission)

IT 7440-19-9, Samarium, uses 7440-22-4, Silver, uses 7440-31-5, Tin, uses 7440-66-6, Zinc, uses 7440-67-7, Zirconium, uses 7440-74-6, Indium, uses

RL: DEV (Device component use); USES (Uses)

(cathode, reflecting layer; mech. flexible organic electroluminescent device with directional light emission)

IT 7439-91-0, Lanthanum, uses 7439-93-2, Lithium, uses 7439-95-4,

Magnesium, uses 7440-09-7, Potassium, uses 7440-23-5, Sodium, uses

7440-24-6, Strontium, uses 7440-39-3, Barium, uses 7440-70-2, Calcium, uses

RL: DEV (Device component use); USES (Uses)

(cathode; mech. flexible organic electroluminescent device with

- directional light emission)
- IT 7429-90-5, Aluminum, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(electrode, reflecting layer; mech. flexible organic electroluminescent device with directional light emission)
- IT 1312-43-2, Indium oxide 1314-13-2, Zinc oxide, uses 50926-11-9, Indium tin oxide 56997-34-3, Cadmium tin oxide 117944-65-7, Indium zinc oxide
RL: DEV (Device component use); USES (Uses)
(electrode; mech. flexible organic electroluminescent device with directional light emission)
- IT 7782-41-4, Fluorine., uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(electrode; mech. flexible organic electroluminescent device with directional light emission)
- IT 7783-40-6, Magnesium fluoride (MgF₂) 12005-19-5, Aluminum terbium oxide (Al₅Tb₃O₁₂) 12027-88-2, Yttrium silicate (Y₂SiO₅) 12253-68-8, Aluminum lutetium oxide (Al₅Lu₃O₁₂) 13709-90-5, Gadolinium borate (GdBO₃) 13812-81-2, Strontium pyrophosphate (Sr₂P₂O₇) 20644-06-8, Magnesium strontium pyrophosphate (MgSrP₂O₇) 55070-88-7, Aluminum cerium magnesium oxide (Al₁₁CeMgO₁₉) 55134-50-4, Aluminum barium magnesium oxide (Al₁₆BaMg₂₀O₂₇) 99533-22-9, Calcium magnesium chloride silicate (Ca₈MgCl₂(SiO₄)₄) 132615-42-0, Aluminum cerium yttrium oxide (Al₅(Ce,Y)₃O₁₂) 272792-87-7 352033-92-2 352033-93-3 494201-96-6, Aluminum cerium gadolinium yttrium oxide (Al₅(Ce,Gd,Y)₃O₁₂) 494201-97-7, Aluminum cerium gallium yttrium oxide ((Al,Ga)₅(Ce,Y)₃O₁₂) 494201-99-9, Gadolinium vanadium yttrium borate oxide ((Gd,Y)V₀₋₁(BO₃)₀₋₁₀) 533920-59-1, Strontium chloride phosphate (Sr₅Cl₂(PO₄)₁₀) 545390-30-5
RL: DEV (Device component use); USES (Uses)
(light emitting layer; mech. flexible organic electroluminescent device with directional light emission)
- IT 7439-96-5, Manganese, uses 7440-27-9, Terbium, uses 7440-69-9, Bismuth, uses 16397-91-4, Manganese(2+), uses 16910-54-6, Europium(2+), uses 18923-26-7, Cerium(3+), uses 19768-33-3, Manganese(4+), uses 22541-20-4, Terbium(3+), uses 23713-46-4, Bismuth(3+), uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(light emitting layer; mech. flexible organic electroluminescent device with directional light emission)
- IT 471-34-1, Calcium carbonate (CaCO₃), uses 1309-48-4, Magnesium oxide, uses 1310-53-8, Germanium oxide, uses 1314-36-9, Yttrium oxide (Y₂O₃), uses 1344-28-1, Alumina, uses 7782-40-3, Diamond, uses 12005-21-9, YAG
RL: DEV (Device component use); USES (Uses)
(light scattering layer, light emitting layer; mech. flexible organic electroluminescent device with directional light emission)
- IT 1314-23-4, Zirconium oxide (ZrO₂), uses 12024-36-1, Gadolinium gallium oxide (Gd₃Ga₅O₁₂) 12055-23-1, Hafnium oxide (HfO₂) 14940-68-2, Zircon
RL: DEV (Device component use); USES (Uses)
(light scattering layer; mech. flexible organic electroluminescent device with directional light emission)
- IT 91-64-5, Coumarin 120-12-7, Anthracene, uses 191-07-1, Coronene 198-55-0, Perylene 517-51-1, Rubrene 632-51-9, Tetraphenyl ethene 806-71-3, Tetraphenylbutadiene 1450-63-1, Tetraphenylbutadiene 13963-57-0, Aluminum acetylacetonate 14405-43-7, Gallium, tris(2,4-pentanedionato-κO,κO')-, (OC-6-11)- 14405-45-9,

Indium acetylacetonate 25067-59-8, Poly(n-vinylcarbazole) 25190-62-9,
Poly(1,4-phenylene) 28802-91-7, Phenylanthracene 95270-88-5D,
Polyfluorene, alkyl- 153521-90-5 181172-82-7 181172-88-3
RL: DEV (Device component use); USES (Uses)
(organic EL layer; mech. flexible organic electroluminescent device with
directional **light** emission)

IT 13463-67-7, Titanium oxide (TiO₂), uses

RL: DEV (Device component use); USES (Uses)
(rutile-type, **light** scattering layer; mech. flexible organic
electroluminescent device with directional **light** emission)

IT 7440-53-1, Europium, uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)
(cathode, reflecting layer, **light** emitting layer; mech.
flexible organic electroluminescent device with directional **light**
emission)

RN 7440-53-1 HCAPLUS

CN Europium (8CI, 9CI) (CA INDEX NAME)

Eu

IT 272792-87-7

RL: DEV (Device component use); USES (Uses)
(**light** emitting layer; mech. flexible organic electroluminescent
device with directional **light** emission)

RN 272792-87-7 HCAPLUS

CN Aluminum barium calcium gallium strontium sulfide ((Al,Ga)₂(Ba,Ca,Sr)₄S₄)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	4	7704-34-9
Ca	0 - 1	7440-70-2
Ga	0 - 2	7440-55-3
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Al	0 - 2	7429-90-5

IT 16910-54-6, Europium(2+), uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)
(**light** emitting layer; mech. flexible organic electroluminescent
device with directional **light** emission)

RN 16910-54-6 HCAPLUS

CN Europium, ion (Eu²⁺) (8CI, 9CI) (CA INDEX NAME)

Eu²⁺

RE.CNT 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 20 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2003:472925 HCAPLUS

DN 139:60172

TI **Light**-emitting device with organic electroluminescent material,

and photoluminescent materials
 IN McNulty, Thomas Francis; Duggal, Anil Raj; Turner, Larry Gene; Shiang,
 Joseph John
 PA General Electric Company, USA
 SO U.S. Pat. Appl. Publ., 19 pp.
 CODEN: USXXCO

DT Patent
 LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003111955	A1	20030619	US 2001-683345	20011217
	US 6903505	B2	20050607		
PRAI	US 2001-683345		20011217		

AB Light-emitting devices are described which comprise a light-emitting member that comprises a first electrode, a second electrode, and ≥ 1 organic electroluminescent (EL) material disposed between the first and second electrodes, the light-emitting member being disposed on a substrate and emitting first electromagnetic (EM) radiation having a first spectrum when an elec. voltage is applied across the electrodes; and ≥ 1 organic photoluminescent (PL) material disposed in a path of light emitted by the light-emitting member, the organic PL material absorbing a portion of the first EM radiation and emitting second EM radiation having a second spectrum. Methods of making light-emitting devices based on ≥ 1 organic EL material are discussed which entail providing a substrate; forming a light-emitting member in a process comprising the steps of (a) depositing a first elec. conducting material on 1 surface of the substrate to form a first electrode; (b) depositing the ≥ 1 organic EL material on the first electrode; and (c) depositing a second elec. conducting material on the organic EL material to form a second electrode; and disposing ≥ 1 organic PL material adjacent to the light-emitting member.

IC ICM H05B033-12
 ICS H05B033-14

INCL 313504000

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
 Section cross-reference(s): 22, 76

ST org light emitting device fabrication electroluminescent photoluminescent OLED display

IT Vapor deposition process
 (chemical; light-emitting devices employing both organic electroluminescent material and photoluminescent materials and methods for fabricating devices using)

IT Silicone rubber, uses
 RL: DEV (Device component use); USES (Uses)
 (di-Me, phosphor dispersed in; light-emitting devices employing both organic electroluminescent material and photoluminescent materials)

IT Coating process
 (dip; light-emitting devices employing both organic electroluminescent material and photoluminescent materials and methods for fabricating devices using)

IT Electroluminescent devices
 (displays; light-emitting devices employing both organic electroluminescent material and photoluminescent materials and methods for fabricating devices)

IT Polysilanes
 RL: DEV (Device component use); USES (Uses)

(electroluminescent material; **light**-emitting devices employing both organic electroluminescent material and photoluminescent materials)

IT Luminescent substances
(electroluminescent, organic; **light**-emitting devices employing both organic electroluminescent material and photoluminescent materials)

IT Luminescent screens
(electroluminescent; **light**-emitting devices employing both organic electroluminescent material and photoluminescent materials and methods for fabricating devices)

IT Polysiloxanes, uses
RL: DEV (Device component use); USES (Uses)
(encapsulant; **light**-emitting devices employing both organic electroluminescent material and photoluminescent materials)

IT Azo dyes
Cyanine dyes
Electroluminescent devices
Luminescent substances
(**light**-emitting devices employing both organic electroluminescent material and photoluminescent materials)

IT Semiconductor device fabrication
(**light**-emitting devices employing both organic electroluminescent material and photoluminescent materials and methods for fabricating devices)

IT Casting process
Crosslinking
Dispersion (of materials)
Ink-jet printing
Spraying
Sputtering
(**light**-emitting devices employing both organic electroluminescent material and photoluminescent materials and methods for fabricating devices using)

IT Optical materials
(**light**-scattering; **light**-emitting devices employing both organic electroluminescent material and photoluminescent materials)

IT Polymers, uses
RL: DEV (Device component use); USES (Uses)
(luminescent material dispersed in; **light**-emitting devices employing both organic electroluminescent material and photoluminescent materials)

IT Epoxides
RL: DEV (Device component use); USES (Uses)
(normal or silicone-functionalized encapsulant; **light**-emitting devices employing both organic electroluminescent material and photoluminescent materials)

IT Vapor deposition process
(phys.; **light**-emitting devices employing both organic electroluminescent material and photoluminescent materials and methods for fabricating devices using)

IT Coating process
(spin; **light**-emitting devices employing both organic electroluminescent material and photoluminescent materials and methods for fabricating devices using)

IT Dyes
(xanthene, coumarin, oxobenzanthracene; **light**-emitting devices employing both organic electroluminescent material and photoluminescent materials)

IT 1314-36-9, Yttrium oxide (Y2O3), uses
RL: DEV (Device component use); USES (Uses)

(bismuth-, europium-codoped luminescent material, scattering material; light-emitting devices employing both organic electroluminescent material and photoluminescent materials)

IT 7429-90-5, Aluminum, uses 7681-49-4, Sodium fluoride NaF, uses
RL: DEV (Device component use); USES (Uses)
(cathode layer; light-emitting devices employing both organic electroluminescent material and photoluminescent materials)

IT 12027-88-2, Yttrium silicate (Y2SiO5) 13709-90-5, Gadolinium borate (GdBO3)
RL: DEV (Device component use); USES (Uses)
(cerium-, terbium-codoped photoluminescent material; light-emitting devices employing both organic electroluminescent material and photoluminescent materials)

IT 12005-19-5, Aluminum terbium oxide (Al5Tb3O12) 12253-68-8, Aluminum lutetium oxide (Al5Lu3O12)
RL: DEV (Device component use); USES (Uses)
(cerium-doped photoluminescent material; light-emitting devices employing both organic electroluminescent material and photoluminescent materials)

IT 7439-96-5, Manganese, uses 7440-27-9, Terbium, uses 7440-69-9, Bismuth, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(doped photoluminescent material; light-emitting devices employing both organic electroluminescent material and photoluminescent materials)

IT 9011-14-7, PMMA
RL: DEV (Device component use); USES (Uses)
(dye-doped; light-emitting devices employing both organic electroluminescent material and photoluminescent materials)

IT 1312-43-2, Indium oxide 1314-13-2, Zinc oxide, uses 1332-29-2, Tin oxide 117944-65-7, Indium zinc oxide
RL: DEV (Device component use); USES (Uses)
(electrode layer; light-emitting devices employing both organic electroluminescent material and photoluminescent materials)

IT 7440-53-1, Europium, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(electrode, doped photoluminescent material; light-emitting devices employing both organic electroluminescent material and photoluminescent materials)

IT 7440-45-1, Cerium, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(electrode, photoluminescent material doped with; light-emitting devices employing both organic electroluminescent material and photoluminescent materials)

IT 7429-90-5D, Aluminum, alloys 7439-91-0, Lanthanum, uses 7439-91-0D, Lanthanum, alloys 7439-93-2, Lithium, uses 7439-93-2D, Lithium, alloys 7439-95-4, Magnesium, uses 7439-95-4D, Magnesium, alloys 7440-09-7, Potassium, uses 7440-09-7D, Potassium, alloys 7440-19-9, Samarium, uses 7440-19-9D, Samarium, alloys 7440-22-4, Silver, uses 7440-22-4D, Silver, alloys 7440-23-5, Sodium, uses 7440-23-5D, Sodium, alloys 7440-24-6, Strontium, uses 7440-24-6D, Strontium, alloys 7440-31-5, Tin, uses 7440-31-5D, Tin, alloys 7440-39-3, Barium, uses 7440-39-3D, Barium, alloys 7440-45-1D, Cerium, alloys 7440-53-1D, Europium, alloys 7440-66-6, Zinc, uses 7440-66-6D, Zinc, alloys 7440-67-7, Zirconium, uses 7440-67-7D, Zirconium, alloys 7440-70-2, Calcium, uses 7440-70-2D, Calcium, alloys 7440-74-6, Indium, uses 7440-74-6D, Indium, alloys

- RL: DEV (Device component use); USES (Uses)
(electrode; **light**-emitting devices employing both organic electroluminescent material and photoluminescent materials)
- IT 74-85-1D, Ethene, tetraaryl 91-64-5, Coumarin 120-12-7, Anthracene, uses 191-07-1, Coronene 198-55-0, Perylene 517-51-1, Rubrene 13963-57-0, Aluminum acetyl acetate 14405-43-7, Gallium, tris(2,4-pentanedionato- κ O, κ O')-, (OC-6-11)- 14405-45-9, Indium acetylacetate 25067-59-8, Poly (n-vinylcarbazole) 25067-59-8D, Poly (n-vinylcarbazole), derivs. 25190-62-9, Poly(1,4-phenylene) 25190-62-9D, Poly(1,4-phenylene), derivs. 27236-84-6, Tetraphenylbutadiene 28802-91-7, Phenylanthracene 95270-88-5D, Poly(fluorene), alkyl derivs. 153521-90-5, 1,3,5-Tris[n-(4-diphenylaminophenyl)phenylamino] benzene 181172-82-7 181172-88-3
- RL: DEV (Device component use); USES (Uses)
(electroluminescent material; **light**-emitting devices employing both organic electroluminescent material and photoluminescent materials)
- IT 13812-81-2, Strontium pyrophosphate (Sr₂P₂O₇) 20644-06-8, Magnesium strontium pyrophosphate (MgSrP₂O₇) 99533-22-9, Calcium magnesium chloride silicate (Ca₈MgCl₂(SiO₄)₄) 545390-30-5
- RL: DEV (Device component use); USES (Uses)
(europium-, manganese-doped photoluminescent material; **light**-emitting devices employing both organic electroluminescent material and photoluminescent materials)
- IT 55134-50-4, Aluminum barium magnesium oxide (Al₁₆BaMg₂O₂₇)
- RL: DEV (Device component use); USES (Uses)
(europium-doped or europium, manganese-codoped photoluminescent material; **light**-emitting devices employing both organic electroluminescent material and photoluminescent materials)
- IT 272792-87-7 494201-99-9, Gadolinium vanadium yttrium borate (Gd₀-1V₀-1Y₀-1B₀-1O₄) 533920-59-1, Strontium chloride phosphate (Sr₅Cl₂(PO₄)₁₀)
- RL: DEV (Device component use); USES (Uses)
(europium-doped photoluminescent material; **light**-emitting devices employing both organic electroluminescent material and photoluminescent materials)
- IT 81-33-4 33941-07-0D, Pyran, derivs. 50926-11-9, Indium tin oxide 60475-00-5D, Thiopyran, derivs. 73467-76-2D, Benzopyrene, derivs. 155090-83-8, Baytron P
- RL: DEV (Device component use); USES (Uses)
(**light**-emitting devices employing both organic electroluminescent material and photoluminescent materials)
- IT 82953-57-9, LUMOGEN F ORANGE 240 123174-58-3, LUMOGEN F RED 300
- RL: DEV (Device component use); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(**light**-emitting devices employing both organic electroluminescent material and photoluminescent materials)
- IT 545390-29-2, Aluminum cerium gadolinium yttrium oxide (Al₅Ce_{0.09}Gd_{0.57}Y_{2.34}O₁₂)
- RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(**light**-emitting devices employing both organic electroluminescent material and photoluminescent materials)
- IT 1309-48-4, Magnesium oxide, uses 1314-23-4, Zirconium oxide (ZrO₂), uses 1317-82-4, Sapphire (Al₂O₃) 7727-43-7, Barium sulfate 7782-40-3, Diamond, uses 10101-52-7, Zirconium silicate (ZrSiO₄) 12005-21-9, Aluminum yttrium oxide (Al₅Y₃O₁₂) 12024-36-1, Gadolinium gallium garnet

(Gd₃Ga₅O₁₂) 12055-23-1, Hafnium oxide (HfO₂) 13397-26-7, Calcite (CaCO₃), uses 13463-67-7, Titanium oxide (TiO₂), uses 157858-56-5, Germanium oxide
RL: DEV (Device component use); USES (Uses)
(light-scattering material; light-emitting devices employing both organic electroluminescent material and photoluminescent materials)
IT 12159-91-0, Germanium magnesium fluoride oxide (GeMg₄FO_{5.5})
RL: DEV (Device component use); USES (Uses)
(manganese-doped photoluminescent material; light-emitting devices employing both organic electroluminescent material and photoluminescent materials)
IT 132615-42-0, Aluminum cerium yttrium oxide (Al₅(Ce,Y)₃O₁₂) 352033-92-2 352033-93-3 494201-96-6, Aluminum cerium gadolinium yttrium oxide (Al₅(Ce,Gd,Y)₃O₁₂) 494201-97-7, Aluminum cerium gallium yttrium oxide ((Al,Ga)₅(Ce,Y)₃O₁₂)
RL: DEV (Device component use); USES (Uses)
(photoluminescent material; light-emitting devices employing both organic electroluminescent material and photoluminescent materials)
IT 55070-88-7, Aluminum cerium magnesium oxide (Al₁₁CeMgO₁₉)
RL: DEV (Device component use); USES (Uses)
(terbium-doped photoluminescent material; light-emitting devices employing both organic electroluminescent material and photoluminescent materials)
IT 7440-53-1, Europium, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(electrode, doped photoluminescent material; light-emitting devices employing both organic electroluminescent material and photoluminescent materials)
RN 7440-53-1 HCAPLUS
CN Europium (8CI, 9CI) (CA INDEX NAME)

Eu

IT 7440-53-1D, Europium, alloys
RL: DEV (Device component use); USES (Uses)
(electrode; light-emitting devices employing both organic electroluminescent material and photoluminescent materials)
RN 7440-53-1 HCAPLUS
CN Europium (8CI, 9CI) (CA INDEX NAME)

Eu

IT 272792-87-7
RL: DEV (Device component use); USES (Uses)
(europium-doped photoluminescent material; light-emitting devices employing both organic electroluminescent material and photoluminescent materials)
RN 272792-87-7 HCAPLUS
CN Aluminum barium calcium gallium strontium sulfide ((Al,Ga)₂(Ba,Ca,Sr)₄) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		

S	4	7704-34-9
Ca	0 - 1	7440-70-2
Ga	0 - 2	7440-55-3
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Al	0 - 2	7429-90-5

RE.CNT 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 21 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2003:466704 HCAPLUS

DN 139:14758

TI **Light** emitting device with phosphor composition

IN Soules, Thomas Frederick; Beers, William Winder; Srivastava, Alok Mani; Levinson, Lionel Monty; Duggal, Anil Raj

PA General Electric Company, USA

SO U.S., 8 pp., Cont.-in-part of U.S. Ser. No. 583,196.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6580097	B1	20030617	US 2000-718240	20001122
	US 6252254	B1	20010626	US 1998-203212	19981130
	US 6469322	B1	20021022	US 2000-583196	20000530
PRAI	US 1998-19647	B2	19980206		
	US 1998-203212	A3	19981130		
	US 2000-583196	A2	20000530		

AB The invention relates to a **light** source comprising a phosphor composition and a **light** emitting device such as an LED or a laser diode. The phosphor composition absorbs radiation having a 1st spectrum and emits radiation having a 2nd spectrum and comprises at least 1 of: YBO₃:Ce³⁺, Tb³⁺; BaMgAl₁₀O₁₇:Eu²⁺, Mn²⁺; (Sr, Ca, Ba) (Al, Ga) ₂ S₄:Eu²⁺; and Y₃Al₅O₁₂:Ce³⁺; and at least 1 of: Y₂O₂S:Eu³⁺, Bi³⁺; YVO₄:Eu³⁺, Bi³⁺; SrS:Eu²⁺; SrY₂S₄:Eu²⁺; CaLa₂S₄:Ce³⁺; and (Ca, Sr)S:Eu²⁺. The phosphor composition and the **light** source together can produce white **light** with pleasing characteristics, such as a color temperature of 3000-6500° K, a color rendering index of .apprx.83-87, and a device luminous efficacy of .apprx.10-20 lm per W.

IC ICM H01L033-00

ICS H01J001-62

INCL 257100000; 257089000; 257098000; 313501000; 313502000; 313503000

CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other Related Properties)

ST **light** emitting device phosphor

IT Electroluminescent devices

Phosphors

Semiconductor lasers

(**light** emitting device with phosphor composition)

IT **Light** sources

(white-emitting; **light** emitting device with phosphor composition)

IT 272792-87-7

RL: DEV (Device component use); USES (Uses)

(Europium-activated; **light** emitting device with phosphor composition)

IT 16397-91-4, Manganese(2+), uses 16910-54-6, Europium ion(2+),

uses 18923-26-7, Cerium(3+), uses 22541-18-0, Europium(3+),

uses 22541-20-4, Terbium(3+), uses 23713-46-4, Bismuth ion(3+), uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (activators; **light** emitting device with phosphor composition)

IT 12340-04-4, Yttrium oxide sulfide (Y2O2S) 13566-12-6, Yttrium vanadate (YVO4)
 RL: DEV (Device component use); USES (Uses)
 (bismuth- and europium-activated; **light** emitting device with phosphor composition)

IT 14060-30-1, Yttrium borate (YBO3)
 RL: DEV (Device component use); USES (Uses)
 (cerium- and terbium-activated; **light** emitting device with phosphor composition)

IT 12005-21-9, Yttrium aluminate (Y3Al5O12) 12525-03-0, Calcium lanthanum sulfide (CaLa2S4)
 RL: DEV (Device component use); USES (Uses)
 (cerium-activated; **light** emitting device with phosphor composition)

IT 12254-04-5, Aluminum barium magnesium oxide (Al10BaMgO17)
 RL: DEV (Device component use); USES (Uses)
 (europium- and manganese-activated; **light** emitting device with phosphor composition)

IT 1314-96-1, Strontium sulfide (SrS) 12535-38-5, Strontium yttrium sulfide (SrY2S4) 82992-94-7, Calcium strontium sulfide ((Ca,Sr)S)
 RL: DEV (Device component use); USES (Uses)
 (europium-activated; **light** emitting device with phosphor composition)

IT 272792-87-7
 RL: DEV (Device component use); USES (Uses)
 (Europium-activated; **light** emitting device with phosphor composition)

RN 272792-87-7 HCAPLUS
 CN Aluminum barium calcium gallium strontium sulfide ((Al,Ga)2(Ba,Ca,Sr)S4) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	4	7704-34-9
Ca	0 - 1	7440-70-2
Ga	0 - 2	7440-55-3
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Al	0 - 2	7429-90-5

IT 16910-54-6, Europium ion(2+), uses 22541-18-0, Europium(3+), uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (activators; **light** emitting device with phosphor composition)

RN 16910-54-6 HCAPLUS
 CN Europium, ion (Eu2+) (8CI, 9CI) (CA INDEX NAME)

Eu2+

RN 22541-18-0 HCAPLUS
 CN Europium, ion (Eu3+) (8CI, 9CI) (CA INDEX NAME)

Eu³⁺

RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 22 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2002:516640 HCAPLUS

DN 137:70398

TI Phosphor converted light emitting diode

IN Mueller, Gerd O.; Mueller-Mach, Regina B.

PA Lumileds Lighting U.S., LLC, USA

SO U.S., 15 pp.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6417019	B1	20020709	US 2001-827382	20010404
	EP 1248304	A2	20021009	EP 2002-76197	20020327
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
	TW 536835	B	20030611	TW 2002-91106501	20020401
	JP 2003034791	A2	20030207	JP 2002-102831	20020404
PRAI	US 2001-827382	A	20010404		
AB	A light emitting device is described comprising a light emitting diode that emits primary light; and a (Sr1-u-v-xMguCavBax)(Ga2-y-zAlyInzS4):Eu2+ phosphor material capable of absorbing at least a portion of the primary light and emitting secondary light having a wavelength longer than a wavelength of the primary light, wherein {u,v,(u+v+x)} = 0-1, and {y, z, y+z} = 0-2.				
IC	ICM H01L021-00				
	ICS H01L033-00; H01L023-29; G02B026-00				
INCL	438029000				
CC	73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)				
	Section cross-reference(s): 76				
ST	light emitting diode phosphor				
IT	Electroluminescent devices				
	Phosphors				
	(phosphor converted light emitting diode)				
IT	127575-65-9, Aluminum gallium indium nitride (AlGaInN) 439212-79-0				
	RL: DEV (Device component use); USES (Uses)				
	(phosphor converted light emitting diode)				
IT	7440-53-1, Europium, uses 16910-54-6, Europium(2+), uses				
	RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)				
	(phosphor converted light emitting diode)				
IT	439212-79-0				
	RL: DEV (Device component use); USES (Uses)				
	(phosphor converted light emitting diode)				
RN	439212-79-0 HCAPLUS				
CN	Aluminum barium calcium gallium indium magnesium strontium sulfide ((Al,Ga,In)2(Ba,Ca,Mg,Sr)S4) (9CI) (CA INDEX NAME)				

Component	Ratio	Component Registry Number
=====+=====+=====		

S	4	7704-34-9
In	0 - 2	7440-74-6
Ca	0 - 1	7440-70-2
Ga	0 - 2	7440-55-3
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Mg	0 - 1	7439-95-4
Al	0 - 2	7429-90-5

IT 7440-53-1, Europium, uses 16910-54-6, Europium(2+), uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)

(phosphor converted light emitting diode)

RN 7440-53-1 HCAPLUS

CN Europium (8CI, 9CI) (CA INDEX NAME)

Eu

RN 16910-54-6 HCAPLUS

CN Europium, ion (Eu2+) (8CI, 9CI) (CA INDEX NAME)

Eu2+

RE.CNT 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 23 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2002:314516 HCAPLUS

DN 136:332605

TI Light-emitting devices using coated phosphors

IN Juestel, Thomas; Ronda, Cornelis; Mayr, Walter; Schmidt, Peter; Weiler, Volker

PA Philips Corporate Intellectual Property Gmbh, Germany; Koninklijke Philips Electronics N.V.

SO Eur. Pat. Appl., 8 pp.

CODEN: EPXXDW

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1199757	A2	20020424	EP 2001-124584	20011015
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
	DE 10051242	A1	20020425	DE 2000-10051242	20001017
	CN 1349262	A	20020515	CN 2001-138578	20011014
	US 2002105266	A1	20020808	US 2001-978995	20011016
	JP 2002223008	A2	20020809	JP 2001-319186	20011017
PRAI	DE 2000-10051242	A	20001017		

AB Light-emitting elements are described which comprise a light-emitting diode and a phosphor layer which incorporates coated (with organic, inorg. or glassy materials) phosphors. The phosphor coatings may comprise polyorganosiloxanes, latexes, borosilicate glasses, phosphosilicate glasses, alkali metal silicate glasses, oxides, borates, and/or phosphates. The phosphors may be oxide phosphors, borate phosphors, sulfide phosphors, aluminate phosphors, vanadate phosphors,

and/or silicate phosphors.

IC ICM H01L033-00

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76

ST light emitting device phosphor layer coated phosphor

IT Silicate glasses
RL: DEV (Device component use); USES (Uses)
(alkali metal silicate; light-emitting devices with phosphor layers including coated phosphors)

IT Electroluminescent devices
Latex
Phosphors
(light-emitting devices with phosphor layers including coated phosphors)

IT Aluminates
Borates
Borosilicate glasses
Oxides (inorganic), uses
Phosphates, uses
Phosphosilicate glasses
Polysiloxanes, uses
Silicates, uses
Sulfides, uses
RL: DEV (Device component use); USES (Uses)
(light-emitting devices with phosphor layers including coated phosphors)

IT Group VB element compounds
RL: DEV (Device component use); USES (Uses)
(vanadates; light-emitting devices with phosphor layers including coated phosphors)

IT 1314-96-1, Strontium sulfide
RL: DEV (Device component use); USES (Uses)
(cerium- or europium-activated; light-emitting devices with phosphor layers including coated phosphors)

IT 12525-03-0, Calcium lanthanum sulfide (CaLa2S4)
RL: DEV (Device component use); USES (Uses)
(cerium-activated; light-emitting devices with phosphor layers including coated phosphors)

IT 1309-48-4, Magnesium oxide (MgO), uses 1312-76-1, Potassium silicate 7631-86-9, Silica, uses 7784-30-7, Aluminum phosphate (AlPO4)
RL: DEV (Device component use); USES (Uses)
(coating; light-emitting devices with phosphor layers including coated phosphors)

IT 12535-38-5, Strontium yttrium sulfide (SrY2S4) 12592-70-0, Strontium gallium sulfide (SrGa2S4) 82992-94-7, Calcium strontium sulfide ((Ca,Sr)S) 119537-26-7, Magnesium calcium sulfide (Mg0-1Ca0-1S) 272792-87-7
RL: DEV (Device component use); USES (Uses)
(europium-activated; light-emitting devices with phosphor layers including coated phosphors)

IT 12005-21-9, YAG 12254-04-5, Barium magnesium aluminate (BaMgAl10O17) 20548-54-3, Calcium sulfide 284461-18-3, Aluminum gadolinium gallium yttrium oxide (Al0-5Gd0-3Ga0-5Y0-3O12)
RL: DEV (Device component use); USES (Uses)
(light-emitting devices with phosphor layers including coated phosphors)

IT 7439-96-5, Manganese, uses 7440-45-1, Cerium, uses 7440-53-1, Europium, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES

(Uses)

(phosphors activated with; **light**-emitting devices with phosphor layers including coated phosphors)

IT 272792-87-7

RL: DEV (Device component use); USES (Uses)

(europium-activated; **light**-emitting devices with phosphor layers including coated phosphors)

RN 272792-87-7 HCAPLUS

CN Aluminum barium calcium gallium strontium sulfide ((Al,Ga)₂(Ba,Ca,Sr)S₄) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	4	7704-34-9
Ca	0 - 1	7440-70-2
Ga	0 - 2	7440-55-3
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Al	0 - 2	7429-90-5

IT 7440-53-1, Europium, uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(phosphors activated with; **light**-emitting devices with phosphor layers including coated phosphors)

RN 7440-53-1 HCAPLUS

CN Europium (8CI, 9CI) (CA INDEX NAME)

Eu

L17 ANSWER 24 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2002:107711 HCAPLUS

DN 136:158612

TI Luminescence conversion based **light** emitting diode and phosphors for wavelength conversion

IN Danielson, Earl; Ellens, Andries; Jermann, Frank; Rossner, Wolfgang; Devenney, Martin; Giaquinta, Daniel; Kobusch, Manfred

PA Osram Opto Semiconductors G.m.b.H. & Co. OHG, Germany; Symyx Technologies Inc.

SO PCT Int. Appl., 35 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	WO 2002011173	A1	20020207	WO 2001-US23665	20010727
	W: JP, US				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
	EP 1328959	A1	20030723	EP 2001-959261	20010727
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
	JP 2004505172	T2	20040219	JP 2002-516806	20010727
	US 2004124758	A1	20040701	US 2003-333725	20030123
	US 6850002	B2	20050201		

PRAI US 2000-221414P P 20000728

WO 2001-US23665 W 20010727

AB **Light** emitting devices are described comprising at least one LED with primary emission (peak) from 370 to 480 nm covered directly or indirectly with a phosphor-containing covering, the phosphor-containing covering

comprising at least one of the following phosphors: type I: a metal sulfide photoluminescent material activated with europium containing at least one element M selected from the group consisting of Ba, Mg, and Zn; type II: a complex thiometallate photoluminescent material activated with at least one of europium and cerium, containing (1) at least one element M* selected from the group consisting of Mg, and Zn, and (2) at least one element N* selected from the group consisting of Al, Ga, In, Y, La, Gd. Phosphors which absorb radiation having a first spectrum and emits radiation having a second spectrum are also described comprising a luminescent metal sulfide MS comprising at least one element selected from the group M = Ba, Mg, and Zn alone or in combination with at least one of Sr, Ca; M being activated with europium, or a luminescent phosphor comprising a complex metal thiometallate photoluminescent material M*N*2S₄ comprising of at least one element selected from the group M* = Mg, Zn, alone or in combination with at least one of Ba, Sr, Ca, and at least one element selected from the group N* = Al, Ga, alone or in combination with In, Y, La, Gd, N* being activated with at least one of Eu and Ce.

IC ICM H01J033-00

ICS H01J001-62

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 76

ST **light** emitting diode phosphor luminescence conversion

IT Electroluminescent devices

Phosphors

(luminescence conversion based **light** emitting diode and phosphors for wavelength conversion)

IT Sulfides, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(phosphor; luminescence conversion based **light** emitting diode and phosphors for wavelength conversion)

IT 7440-53-1, Europium, uses

RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)

(luminescence activator; luminescence conversion based **light** emitting diode and phosphors for wavelength conversion)

IT 7440-45-1, Cerium, uses

RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)

(luminescence conversion based **light** emitting diode and phosphors for wavelength conversion)

IT 7429-90-5, Aluminum, occurrence 7439-91-0, Lanthanum, occurrence

7439-95-4, Magnesium, occurrence 7440-24-6, Strontium, occurrence

7440-39-3, Barium, occurrence 7440-54-2, Gadolinium, occurrence

7440-55-3, Gallium, occurrence 7440-65-5, Yttrium, occurrence

7440-66-6, Zinc, occurrence 7440-70-2, Calcium, occurrence 7440-74-6, Indium, occurrence

RL: OCU (Occurrence, unclassified); TEM (Technical or engineered material use); OCCU (Occurrence); USES (Uses)

(luminescence conversion based **light** emitting diode and phosphors for wavelength conversion)

IT 389063-68-7, Barium calcium europium gallium magnesium sulfide

(Ba_{0.2}Ca_{0.15}Eu_{0.05}Ga₂Mg_{0.6}S₄) 389063-72-3, Barium europiumgallium magnesium sulfide (Ba_{0.38}Eu_{0.05}Ga₂Mg_{0.57}S₄) 393587-09-2

393587-10-5 393587-11-6, Europium strontium sulfide
 (Eu0.02Sr0.98S) 393587-12-7 393587-13-8
 393587-14-9 393587-15-0 393587-16-1
 393587-17-2 393587-18-3 393587-19-4
 393587-20-7 393587-21-8 393587-22-9
 393587-23-0

RL: TEM (Technical or engineered material use); USES (Uses)
 (luminescence conversion based light emitting diode and
 phosphors for wavelength conversion)

IT 7440-53-1, Europium, uses

RL: MOA (Modifier or additive use); TEM (Technical or engineered material
 use); USES (Uses)

(luminescence activator; luminescence conversion based light
 emitting diode and phosphors for wavelength conversion)

RN 7440-53-1 HCAPLUS

CN Europium (8CI, 9CI) (CA INDEX NAME)

Eu

IT 389063-68-7, Barium calcium europium gallium magnesium sulfide
 (Ba0.2Ca0.15Eu0.05Ga2Mg0.6S4) 389063-72-3, Barium europium
 gallium magnesium sulfide (Ba0.38Eu0.05Ga2Mg0.57S4) 393587-09-2
 393587-10-5 393587-11-6, Europium strontium sulfide
 (Eu0.02Sr0.98S) 393587-12-7 393587-13-8
 393587-14-9 393587-15-0 393587-16-1
 393587-17-2 393587-19-4 393587-20-7
 393587-21-8 393587-22-9 393587-23-0

RL: TEM (Technical or engineered material use); USES (Uses)
 (luminescence conversion based light emitting diode and
 phosphors for wavelength conversion)

RN 389063-68-7 HCAPLUS

CN Barium calcium europium gallium magnesium sulfide
 (Ba0.2Ca0.15Eu0.05Ga2Mg0.6S4) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	4	7704-34-9
Ca	0.15	7440-70-2
Ga	2	7440-55-3
Eu	0.05	7440-53-1
Ba	0.2	7440-39-3
Mg	0.6	7439-95-4

RN 389063-72-3 HCAPLUS

CN Barium europium gallium magnesium sulfide (Ba0.38Eu0.05Ga2Mg0.57S4) (9CI)
 (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	4	7704-34-9
Ga	2	7440-55-3
Eu	0.05	7440-53-1
Ba	0.38	7440-39-3
Mg	0.57	7439-95-4

RN 393587-09-2 HCAPLUS

CN Barium calcium europium strontium sulfide (Ba0.03Ca0.15Eu0.01Sr0.81S)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====		
S	1	7704-34-9
Ca	0.15	7440-70-2
Eu	0.01	7440-53-1
Ba	0.03	7440-39-3
Sr	0.81	7440-24-6

RN 393587-10-5 HCAPLUS

CN Barium calcium europium strontium sulfide (Ba0.03Ca0.15Eu0.02Sr0.8S) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====		
S	1	7704-34-9
Ca	0.15	7440-70-2
Eu	0.02	7440-53-1
Ba	0.03	7440-39-3
Sr	0.8	7440-24-6

RN 393587-11-6 HCAPLUS

CN Europium strontium sulfide (Eu0.02Sr0.98S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====		
S	1	7704-34-9
Eu	0.02	7440-53-1
Sr	0.98	7440-24-6

RN 393587-12-7 HCAPLUS

CN Barium europium gallium magnesium sulfide (Ba0.8Eu0.05Ga2Mg0.15S4) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====		
S	4	7704-34-9
Ga	2	7440-55-3
Eu	0.05	7440-53-1
Ba	0.8	7440-39-3
Mg	0.15	7439-95-4

RN 393587-13-8 HCAPLUS

CN Calcium europium gallium magnesium strontium sulfide
(Ca0.3Eu0.05Ga2Mg0.55Sr0.1S4) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====		
S	4	7704-34-9
Ca	0.3	7440-70-2
Ga	2	7440-55-3
Eu	0.05	7440-53-1
Sr	0.1	7440-24-6

Mg | 0.55 | 7439-95-4

RN 393587-14-9 HCAPLUS

CN Barium calcium europium gallium magnesium sulfide
(Ba0.23Ca0.17Eu0.05Ga2Mg0.55S4) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	4	7704-34-9
Ca	0.17	7440-70-2
Ga	2	7440-55-3
Eu	0.05	7440-53-1
Ba	0.23	7440-39-3
Mg	0.55	7439-95-4

RN 393587-15-0 HCAPLUS

CN Barium europium gallium magnesium strontium sulfide
(Ba0.3Eu0.05Ga2Mg0.55Sr0.1S4) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	4	7704-34-9
Ga	2	7440-55-3
Eu	0.05	7440-53-1
Ba	0.3	7440-39-3
Sr	0.1	7440-24-6
Mg	0.55	7439-95-4

RN 393587-16-1 HCAPLUS

CN Europium gallium magnesium strontium zinc sulfide
(Eu0.05Ga2Mg0.1Sr0.65Zn0.2S4) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	4	7704-34-9
Zn	0.2	7440-66-6
Ga	2	7440-55-3
Eu	0.05	7440-53-1
Sr	0.65	7440-24-6
Mg	0.1	7439-95-4

RN 393587-17-2 HCAPLUS

CN Europium gallium magnesium strontium zinc sulfide
(Eu0.05Ga2Mg0.3Sr0.55Zn0.1S4) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	4	7704-34-9
Zn	0.1	7440-66-6
Ga	2	7440-55-3
Eu	0.05	7440-53-1
Sr	0.55	7440-24-6
Mg	0.3	7439-95-4

RN 393587-19-4 HCAPLUS

CN Aluminum barium europium gallium magnesium sulfide

(Al0.05Ba0.38Eu0.05Ga1.95Mg0.57S4) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	4	7704-34-9
Ga	1.95	7440-55-3
Eu	0.05	7440-53-1
Ba	0.38	7440-39-3
Mg	0.57	7439-95-4
Al	0.05	7429-90-5

RN 393587-20-7 HCAPLUS

CN Barium europium gallium indium magnesium sulfide
(Ba0.8Eu0.05Ga1.95In0.05Mg0.15S4) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	4	7704-34-9
In	0.05	7440-74-6
Ga	1.95	7440-55-3
Eu	0.05	7440-53-1
Ba	0.8	7440-39-3
Mg	0.15	7439-95-4

RN 393587-21-8 HCAPLUS

CN Barium europium gallium magnesium strontium yttrium sulfide
(Ba0.29Eu0.05Ga1.95Mg0.57Sr0.09Y0.05S4) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	4	7704-34-9
Y	0.05	7440-65-5
Ga	1.95	7440-55-3
Eu	0.05	7440-53-1
Ba	0.29	7440-39-3
Sr	0.09	7440-24-6
Mg	0.57	7439-95-4

RN 393587-22-9 HCAPLUS

CN Calcium europium gallium magnesium strontium sulfide
(Ca0.28Eu0.05Ga2Mg0.57Sr0.1S4) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	4	7704-34-9
Ca	0.28	7440-70-2
Ga	2	7440-55-3
Eu	0.05	7440-53-1
Sr	0.1	7440-24-6
Mg	0.57	7439-95-4

RN 393587-23-0 HCAPLUS

CN Europium gallium magnesium strontium zinc sulfide
(Eu0.05Ga2Mg0.28Sr0.57Zn0.1S4) (9CI) (CA INDEX NAME)

Component	Ratio	Component
-----------	-------	-----------

		Registry Number
S	4	7704-34-9
Zn	0.1	7440-66-6
Ga	2	7440-55-3
Eu	0.05	7440-53-1
Sr	0.57	7440-24-6
Mg	0.28	7439-95-4

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 25 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:904833 HCAPLUS
DN 136:45354
TI Highly efficient fluorescent material
IN Ellens, Andries; Kobusch, Manfred; Rossner, Wolfgang
PA Patent-Treuhand-Gesellschaft Fuer Elektrische Gluehlampen Mbh, Germany;
Osram Opto Semiconductors GmbH & Co. Ohg
SO PCT Int. Appl., 18 pp.
CODEN: PIXXD2

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001095400	A1	20011213	WO 2001-DE2130	20010607
	W: CA, CN, JP, KR, US				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
	DE 10028266	A1	20011213	DE 2000-10028266	20000609
	CA 2381443	AA	20011213	CA 2001-2381443	20010607
	EP 1290737	A1	20030312	EP 2001-947187	20010607
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
	JP 2003535964	T2	20031202	JP 2002-502837	20010607
	TW 554031	B	20030921	TW 2001-90113951	20010608
	US 2002149001	A1	20021017	US 2002-48963	20020204
	US 6695982	B2	20040224		
PRAI	DE 2000-10028266	A	20000609		
	WO 2001-DE2130	W	20010607		

AB Thiometallate phosphors described approx. by the general formula $AB_2S_4:D_2+$ (A = ≥ 1 divalent cation selected from Mg, Ca, and/or Sr; B = ≥ 1 trivalent cation selected from Al, Ga, and/or Y; and D = Eu and/or Ce) are described which the actual composition is chosen to correspond to $(AS).w(B_2S_3)$ ($0.8 \leq w \leq 0.98$ or $1.02 \leq w \leq 1.2$). Preferably the phosphors are thiogallates. Methods for preparing the thiometallate phosphors are described which entail forming a suspension of nitrates in amts. corresponding to the desired composition; drying the suspension at $\leq 300^\circ$ so that the residual moisture content is < 1 weight% to produce a finely dispersed nitrate mixture; grinding the nitrate mixture in a mortar at room temp for 10-60 min (preferably 15-25 min); pyrolyzing the ground mixture at $500-700^\circ$ (preferably 600°) under an Ar or N₂ atmospheric to produce a mixture of metal oxides corresponding to the desired composition; carrying out a first conversion of the metal oxide mixture at $800-1000^\circ$ (preferably $900-950^\circ$) under flowing H₂S and/or CS₂ for 1-6 h (preferably 4 h); grinding the product; and carrying out a second conversion at $800-1000^\circ$ (preferably $900-950^\circ$) under flowing H₂S and/or CS₂ for 1-6 h (preferably 2 h). Use of the

phosphors as color conversion phosphors in light-emitting devices or plasma displays is also described.

IC ICM H01L033-00
ICS H01J017-49

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74

ST thiogallate phosphor prodn; thiometallate phosphor prodn

IT Phosphors
(thiometallate phosphors and their production and use)

IT Group VIA element compounds
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(thiometallate phosphors and their production and use)

IT 379735-68-9P 379735-70-3P 379735-72-5P
379735-73-6P 379735-76-9P
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(thiometallate phosphors and their production and use)

IT 7440-45-1P, Cerium, uses 7440-53-1P, Europium, uses 16679-11-1P, Cerium +2, uses 16910-54-6P, Europium +2, uses
RL: DEV (Device component use); IMF (Industrial manufacture); MOA (Modifier or additive use); PREP (Preparation); USES (Uses)
(thiometallate phosphors and their production and use)

IT 75-15-0, Carbon disulfide, reactions 471-34-1, Calcium carbonate, reactions 1308-96-9, Europium oxide 1309-48-4, Magnesium oxide, reactions 1633-05-2, Strontium carbonate 7697-37-2, Nitric acid, reactions 7783-06-4, Hydrogen sulfide, reactions 12024-21-4, Gallium oxide
RL: RCT (Reactant); RACT (Reactant or reagent)
(thiometallate phosphors and their production and use)

IT 1305-78-8P, Calcium oxide, reactions 1314-11-0P, Strontium oxide, reactions 10042-76-9P, Strontium nitrate 10124-37-5P, Calcium nitrate 10138-01-9P, Europium nitrate 10377-60-3P, Magnesium nitrate 13494-90-1P, Gallium nitrate
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(thiometallate phosphors and their production and use)

IT 379735-68-9P 379735-70-3P 379735-72-5P
379735-73-6P 379735-76-9P
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(thiometallate phosphors and their production and use)

RN 379735-68-9 HCAPLUS

CN Calcium europium gallium magnesium strontium sulfide
(Ca0.21Eu0.06Ga1.8Mg0.63Sr0.1S3.7) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	3.7	7704-34-9
Ca	0.21	7440-70-2
Ga	1.8	7440-55-3
Eu	0.06	7440-53-1
Sr	0.1	7440-24-6
Mg	0.63	7439-95-4

RN 379735-70-3 HCAPLUS

CN Calcium europium gallium magnesium strontium sulfide
(Ca0.21Eu0.06Ga2Mg0.63Sr0.1S4) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	4	7704-34-9
Ca	0.21	7440-70-2
Ga	2	7440-55-3
Eu	0.06	7440-53-1
Sr	0.1	7440-24-6
Mg	0.63	7439-95-4

RN 379735-72-5 HCAPLUS

CN Calcium europium gallium magnesium strontium sulfide
(Ca0.21Eu0.06Ga2.2Mg0.63Sr0.1S4.3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	4.3	7704-34-9
Ca	0.21	7440-70-2
Ga	2.2	7440-55-3
Eu	0.06	7440-53-1
Sr	0.1	7440-24-6
Mg	0.63	7439-95-4

RN 379735-73-6 HCAPLUS

CN Calcium europium gallium magnesium strontium sulfide
(Ca0.21Eu0.06Ga2.4Mg0.63Sr0.1S4.6) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	4.6	7704-34-9
Ca	0.21	7440-70-2
Ga	2.4	7440-55-3
Eu	0.06	7440-53-1
Sr	0.1	7440-24-6
Mg	0.63	7439-95-4

RN 379735-76-9 HCAPLUS

CN Calcium europium gallium magnesium strontium sulfide
(Ca0.21Eu0.06Ga2.5Mg0.63Sr0.1S4.75) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	4.75	7704-34-9
Ca	0.21	7440-70-2
Ga	2.5	7440-55-3
Eu	0.06	7440-53-1
Sr	0.1	7440-24-6
Mg	0.63	7439-95-4

IT 7440-53-1P, Europium, uses 16910-54-6P, Europium +2,
usesRL: DEV (Device component use); IMF (Industrial manufacture); MOA
(Modifier or additive use); PREP (Preparation); USES (Uses)
(thiometallate phosphors and their production and use)

RN 7440-53-1 HCAPLUS

CN Europium (8CI, 9CI) (CA INDEX NAME)

Eu

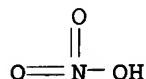
RN 16910-54-6 HCAPLUS
 CN Europium, ion (Eu2+) (8CI, 9CI) (CA INDEX NAME)

Eu2+

IT 1308-96-9, Europium oxide
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (thiometallate phosphors and their production and use)
 RN 1308-96-9 HCAPLUS
 CN Europium oxide (Eu2O3) (6CI, 8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 10138-01-9P, Europium nitrate
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
 (Reactant or reagent)
 (thiometallate phosphors and their production and use)
 RN 10138-01-9 HCAPLUS
 CN Nitric acid, europium(3+) salt (8CI, 9CI) (CA INDEX NAME)



● 1/3 Eu(III)

RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 26 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 2001:464400 HCAPLUS
 DN 135:68323
 TI Light-emitting devices with phosphor composition
 IN Soules, Thomas Frederick; Beers, William Winder; Srivastava, Alok Mani;
 Levinson, Lionel Monty; Duggal, Anil Raj
 PA General Electric Company, USA
 SO U.S., 8 pp., Cont.-in-part of U.S. Ser. No. 19,647, abandoned.
 CODEN: USXXAM

DT Patent
 LA English

FAN.CNT 4

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6252254	B1	20010626	US 1998-203212	19981130
WO 2000033390	A1	20000608	WO 1999-US28280	19991130

W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE,
 DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP,
 KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN,
 MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM,
 TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

AU 2000020339 A5 20000619 AU 2000-20339 19991130
 EP 1051759 A1 20001115 EP 1999-964013 19991130
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI

JP 2002531956 T2 20020924 JP 2000-585942 19991130
 US 6469322 B1 20021022 US 2000-583196 20000530
 US 6580097 B1 20030617 US 2000-718240 20001122

PRAI US 1998-19647 B2 19980206
 US 1998-203212 A 19981130
 WO 1999-US28280 W 19991130
 US 2000-583196 A2 20000530

AB **Light**-emitting devices are described which comprise a blue **light**-emitting diode (LED) covered with a phosphor-containing covering containing a green-emitting phosphor and a red-emitting phosphor; where the green and red phosphors are excitable by the blue-emitting LED, such that the green and red phosphors absorb radiation with a first spectrum emitted by the LED; the green phosphor emits radiation having a second spectrum; the red phosphor emitting radiation having a third spectrum; the green phosphor comprising ≥ 1 of $\text{YBO}_3\text{:Ce}^{3+}, \text{Tb}^{3+}$; $\text{BaMgAl}_{10}\text{O}_{17}\text{:Eu}^{2+}, \text{Mn}^{2+}$; and $(\text{Sr}, \text{Ca}, \text{Ba})(\text{Al}, \text{Ga})_2\text{S}_4\text{:Eu}^{2+}$; and the red phosphor comprising ≥ 1 of: $\text{Y}_2\text{O}_2\text{S}\text{:Eu}^{3+}, \text{Bi}^{3+}$; $\text{YVO}_4\text{:Eu}^{3+}, \text{Bi}^{3+}$; $\text{SrS}\text{:Eu}^{2+}$; $\text{SrY}_2\text{S}_4\text{:Eu}^{2+}$; $\text{CaLa}_2\text{S}_4\text{:Ce}^{3+}$; and $(\text{Ca}, \text{Sr})\text{S}\text{:Eu}^{2+}$. The phosphors and the LED together can produce white **light** with pleasing characteristics, such as a color temperature of 3000-6500° K, a color rendering index of .apprx.83-87, and a device luminous efficacy of .apprx.10-20 lm/W.

IC ICM H01L033-00
 ICS H01J001-62

INCL 257089000

CC 73-5 (**Optical**, Electron, and Mass Spectroscopy and Other Related Properties)
 Section cross-reference(s): 76

ST electroluminescent device blue LED red green phosphor white **light**

IT Electroluminescent devices
 Phosphors
 (**light** emitting device with phosphor composition)

IT 12254-04-5, Aluminum barium magnesium oxide ($\text{Al}_{10}\text{BaMgO}_{17}$) 14060-30-1, Yttrium borate (YBO_3) 272792-87-7
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
 (green phosphor host lattice; **light** emitting device with phosphor composition)

IT 7439-96-5, Manganese, properties 7440-09-7, Potassium, properties 7440-27-9, Terbium, properties 7440-45-1, Cerium, properties 7440-53-1, Europium, properties 7440-69-9, Bismuth, properties 16397-91-4, Manganese(2+), properties 16910-54-6, Europium(2+), properties 18923-26-7, Cerium(3+), properties 22541-18-0, Europium(3+), properties 22541-20-4, Terbium(3+), properties 23713-46-4, Bismuth(3+), properties 24203-36-9, Potassium(1+), properties
 RL: DEV (Device component use); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
 (phosphor activator; **light** emitting device with phosphor composition)

IT 1314-96-1, Strontium sulfide (SrS) 12340-04-4, Yttrium oxide sulfide ($\text{Y}_2\text{O}_2\text{S}$) 12525-03-0, Calcium lanthanum sulfide (CaLa_2S_4) 12535-38-5, Strontium yttrium sulfide (SrY_2S_4) 13566-12-6, Yttrium vanadate (YVO_4)

82992-94-7, Calcium strontium sulfide (CaSr)S

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)

(red phosphor host lattice; **light** emitting device with phosphor composition)

IT 272792-87-7

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)

(green phosphor host lattice; **light** emitting device with phosphor composition)

RN 272792-87-7 HCAPLUS

CN Aluminum barium calcium gallium strontium sulfide ((Al,Ga)₂(Ba,Ca,Sr)S₄) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====		
S	4	7704-34-9
Ca	0 - 1	7440-70-2
Ga	0 - 2	7440-55-3
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Al	0 - 2	7429-90-5

IT 7440-53-1, Europium, properties 16910-54-6,

Europium(2+), properties 22541-18-0, Europium(3+), properties

RL: DEV (Device component use); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)

(phosphor activator; **light** emitting device with phosphor composition)

RN 7440-53-1 HCAPLUS

CN Europium (8CI, 9CI) (CA INDEX NAME)

Eu

RN 16910-54-6 HCAPLUS

CN Europium, ion (Eu²⁺) (8CI, 9CI) (CA INDEX NAME)

Eu²⁺

RN 22541-18-0 HCAPLUS

CN Europium, ion (Eu³⁺) (8CI, 9CI) (CA INDEX NAME)

Eu³⁺

RE.CNT 63 THERE ARE 63 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 27 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2000:384624 HCAPLUS

DN 133:24533

TI **Light** emitting device with phosphor composition

IN Srivastava, Alok Mani; Levinson, Lionel Monty; Beers, William Winder;

Duggal, Anil Raj
 PA General Electric Company, USA
 SO PCT Int. Appl., 26 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000033390	A1	20000608	WO 1999-US28280	19991130
	W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	US 6252254	B1	20010626	US 1998-203212	19981130
	AU 2000020339	A5	20000619	AU 2000-20339	19991130
	EP 1051759	A1	20001115	EP 1999-964013	19991130
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	JP 2002531956	T2	20020924	JP 2000-585942	19991130
PRAI	US 1998-203212	A	19981130		
	US 1998-19647	B2	19980206		
	WO 1999-US28280	W	19991130		
AB	Light sources (lamps, light-emitting devices) are described which comprise a (e.g., blue-emitting) light source covered with a covering that contains (e.g., blue-stimulable green-emitting and red-emitting) phosphors. The phosphor composition absorbs radiation having a first spectrum and emits radiation having a second spectrum and preferably comprises ≥ 1 of: YBO ₃ :Ce ³⁺ , Tb ³⁺ ; BaMgAl ₁₀ O ₁₇ :Eu ²⁺ , Mn ²⁺ ; (Sr, Ca, Ba) (Al, Ga) ₂ S ₄ :Eu ²⁺ ; and Y ₃ Al ₅ O ₁₂ :Ce ³⁺ ; and ≥ 1 of: Y ₂ O ₂ S:Eu ³⁺ , Bi ³⁺ ; YVO ₄ :Eu ³⁺ , Bi ³⁺ ; SrS:Eu ²⁺ ; SrY ₂ S ₄ :Eu ²⁺ ; CaLa ₂ S ₄ :Ce ³⁺ ; and (Ca, Sr)S:Eu ²⁺ . Methods of producing white light using the phosphor composition and the light source together are also described. Phosphor compns. comprising Y ₂ O ₂ S:Eu ³⁺ , Bi ³⁺ or YVO ₄ :Eu ³⁺ , Bi ³⁺ are also claimed.				
IC	ICM H01L033-00				
	ICS C09K011-78; C09K011-80; C09K011-82				
CC	73-11 (Optical , Electron, and Mass Spectroscopy and Other Related Properties)				
ST	light source phosphor cover				
IT	Electric lamps				
	Electroluminescent devices				
	Light sources				
	Phosphors				
	(light sources based on sources with coverings containing phosphors)				
IT	7439-96-5, Manganese, uses 7440-27-9, Terbium, uses 7440-45-1, Cerium, uses 7440-53-1, Europium, uses 7440-69-9, Bismuth, uses 16397-91-4, Manganese +2, uses 16910-54-6, Europium +2, uses 18923-26-7, Cerium +3, uses 22541-18-0, Europium +3, uses 22541-20-4, Terbium +3, uses 23713-46-4, Bismuth +3, uses				
	RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)				
	(activator; light sources based on sources with coverings containing phosphors)				
IT	12340-04-4, Yttrium oxide sulfide (Y ₂ O ₂ S) 13566-12-6, Yttrium vanadate				

RL: DEV (Device component use); USES (Uses)
 (bismuth- and europium-activated; **light** sources based on
 sources with coverings containing phosphors)
 IT 14060-30-1, Yttrium borate (YBO3)
 RL: DEV (Device component use); USES (Uses)
 (cerium- and terbium-activated; **light** sources based on
 sources with coverings containing phosphors)
 IT 12005-21-9, Yttrium aluminate (Y3Al5O12) 12525-03-0, Calcium lanthanum
 sulfide (CaLa2S4)
 RL: DEV (Device component use); USES (Uses)
 (cerium-activated; **light** sources based on sources with
 coverings containing phosphors)
 IT 12254-04-5, Barium magnesium aluminate (BaMgAl10O17)
 RL: DEV (Device component use); USES (Uses)
 (europium- and manganese-activated; **light** sources based on
 sources with coverings containing phosphors)
 IT 1314-96-1, Strontium sulfide 12535-38-5, Strontium yttrium sulfide
 (SrY2S4) 82992-94-7, Calcium strontium sulfide ((Ca,Sr)S)
 272792-87-7
 RL: DEV (Device component use); USES (Uses)
 (europium-activated; **light** sources based on sources with
 coverings containing phosphors)
 IT 7440-53-1, Europium, uses 16910-54-6, Europium +2, uses
 22541-18-0, Europium +3, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES
 (Uses)
 (activator; **light** sources based on sources with coverings
 containing phosphors)
 RN 7440-53-1 HCAPLUS
 CN Europium (8CI, 9CI) (CA INDEX NAME)

Eu

RN 16910-54-6 HCAPLUS
 CN Europium, ion (Eu2+) (8CI, 9CI) (CA INDEX NAME)

Eu2+

RN 22541-18-0 HCAPLUS
 CN Europium, ion (Eu3+) (8CI, 9CI) (CA INDEX NAME)

Eu3+

IT 272792-87-7
 RL: DEV (Device component use); USES (Uses)
 (europium-activated; **light** sources based on sources with
 coverings containing phosphors)
 RN 272792-87-7 HCAPLUS
 CN Aluminum barium calcium gallium strontium sulfide ((Al,Ga)2(Ba,Ca,Sr)S4)
 (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		

S	4	7704-34-9
Ca	0 - 1	7440-70-2
Ga	0 - 2	7440-55-3
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Al	0 - 2	7429-90-5

RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 28 OF 28 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2000:384623 HCAPLUS
DN 133:24532
TI Light emitting device with phosphor having high luminous efficacy
IN Levinson, Lionel Monty; Srivastava, Alok Mani
PA General Electric Company, USA
SO PCT Int. Appl., 21 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000033389	A1	20000608	WO 1999-US28279	19991130
	W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	US 6429583	B1	20020806	US 1998-203206	19981130
	EP 1051758	A1	20001115	EP 1999-964012	19991130
	R: DE, FR, GB, IT				
	JP 2002531955	T2	20020924	JP 2000-585941	19991130
PRAI	US 1998-203206	A	19981130		
	WO 1999-US28279	W	19991130		
AB	Lamps are described which comprise a light-emitting element (e.g., a light emitting diode or a laser diode) which emits blue light, and a phosphor composition which absorbs the blue light having a first spectrum from the light-emitting element and emits light having a second spectrum. Preferably, the phosphor composition comprises ≥ 1 of Ba ₂ MgSi ₂ O ₇ :Eu ²⁺ ; Ba ₂ SiO ₄ :Eu ²⁺ ; and (Sr,Ca,Ba)(Al,Ga) ₂ SiO ₄ :Eu ²⁺ .				
IC	ICM H01L033-00				
CC	73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)				
ST	lamp blue light stimulated phosphor				
IT	Electric lamps				
	Phosphors				
	(lamps using blue light-emitting sources with blue light-stimulated phosphors)				
IT	7440-53-1, Europium, uses 16910-54-6, Europium +2, uses RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)				
	(activator; lamps using blue light-emitting sources with blue light-stimulated phosphors)				
IT	13596-31-1, Barium magnesium silicate (Ba ₂ MgSi ₂ O ₇) 13778-49-9, Barium				

silicate (Ba₂SiO₄) 272792-87-7
 RL: DEV (Device component use); USES (Uses)
 (europium-activated; lamps using blue light-emitting sources
 with blue light-stimulated phosphors)
 IT 7440-53-1, Europium, uses 16910-54-6, Europium +2, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES
 (Uses)
 (activator; lamps using blue light-emitting sources with blue
 light-stimulated phosphors)
 RN 7440-53-1 HCAPLUS
 CN Europium (8CI, 9CI) (CA INDEX NAME)

Eu

RN 16910-54-6 HCAPLUS
 CN Europium, ion (Eu²⁺) (8CI, 9CI) (CA INDEX NAME)

Eu²⁺

IT 272792-87-7
 RL: DEV (Device component use); USES (Uses)
 (europium-activated; lamps using blue light-emitting sources
 with blue light-stimulated phosphors)
 RN 272792-87-7 HCAPLUS
 CN Aluminum barium calcium gallium strontium sulfide ((Al,Ga)₂(Ba,Ca,Sr)S₄)
 (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
S	4	7704-34-9
Ca	0 - 1	7440-70-2
Ga	0 - 2	7440-55-3
Ba	0 - 1	7440-39-3
Sr	0 - 1	7440-24-6
Al	0 - 2	7429-90-5

RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

=>